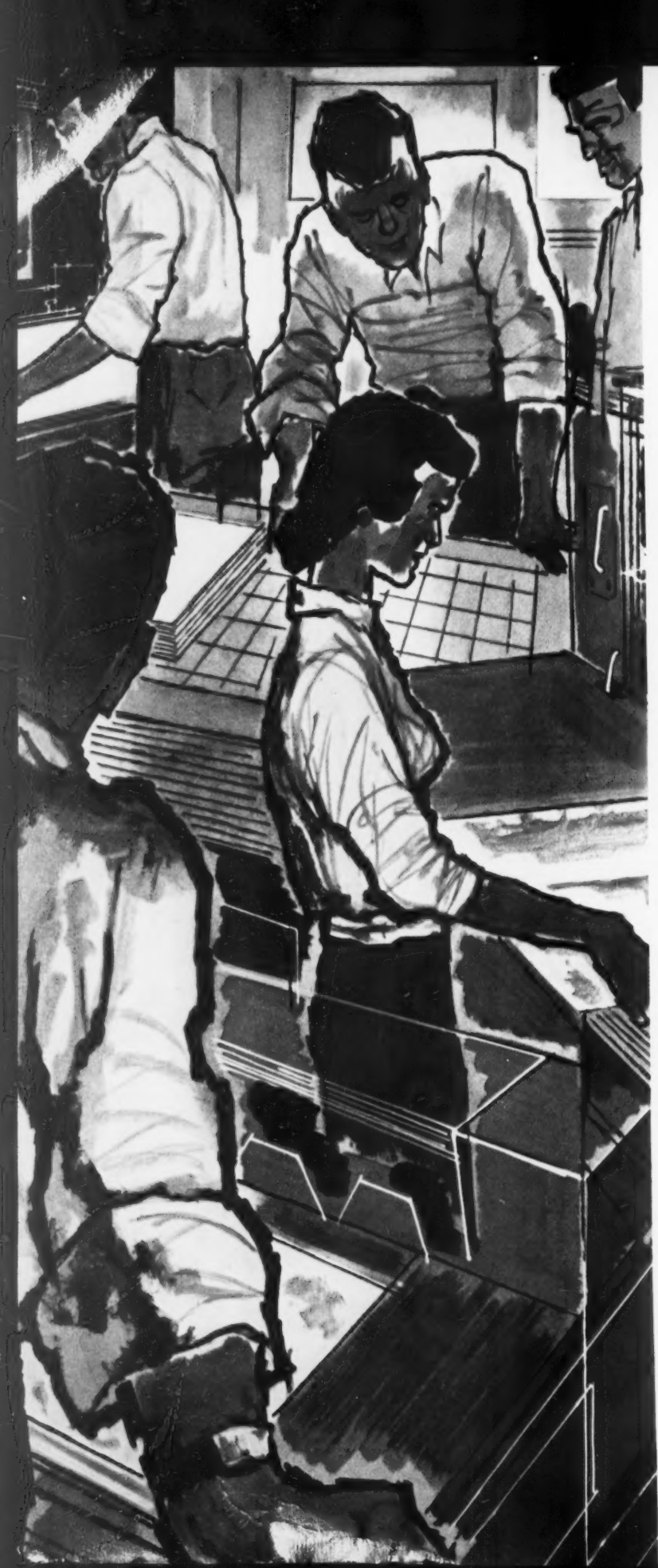


architectural &
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DECEMBER 1961 VOLUME 3 NUMBER 12

NEWS



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This month's A/E NEWS examines current trends in OFFICE PRACTICE, beginning with a special article on the ever-present theme of cost control (p. 10). Other articles deal with the use of computers in building design (p. 14) and with a new photographic technique of measuring buildings due for alteration. Results of a special survey on trends in office efficiency appear on page 20. Ted Conrad, the colorful builder of architectural models, is portrayed in a profile on page 59.

Cover design by Blechman and Palladino reflects the tenor of the Season. Photograph is by David Hirsch.

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MAIL

Architect-interior designer collaboration

TO THE EDITOR:

Your article in the September issue on architect-interior designer collaboration was thought-provoking. Having devoted a good part of my office experience in the store design field, I can understand the various conflicts which may arise between the architect and interior designer.

Personally, I feel that a good interior designer, especially if he influences planning, should possess a good background in building design and construction, the more experience the better.

GARY LAREDO, AIA
Brookline, Mass.

GAZETTE

VINCENT G. KLING FAIA was awarded the Silver Medal of the Pennsylvania Society of Architects for his design of the new McNeil Laboratories, Inc., offices and plant at Fort Washington, Pa. His design was cited by the Society as the "outstanding design of 1961."

The California Council AIA distinguished service citation was awarded to Charles Dana Gibson, chief of the Bureau of School Planning, State Department of Education, Valley M. Knudsen, chairman of "Los Angeles Beautiful"; William Mooser, Sr., FAIA, and Harold L. Zellerbach, San Francisco businessman.

CHARLES J. ALLEN PE has been appointed assistant chief mechanical engineer in the firm of Albert Kahn Associated Architects and Engineers, Inc., of Detroit.

WILLIAM E. DUNLAP and JOHN R. WEESE AIA have been elected general partners in the firm of Skidmore, Owings and Merrill.

ROGER E. GAY, former president of the Bristol Brass Corp., will succeed Vice Admiral George F. Hussey, Jr., USN (Ret), as managing director of the American Standards Association, effective January 1962.

MARTIN L. BECK FAIA, president of the New Jersey State Board of Architects, has been appointed director of planning and supervising architect of New York University.

WILLIAM A. WILDHACK has been appointed an associate director of the National Bureau of Standards.

JOHN P. JANSSON AIA, manager of market development for the Metals Division of Olin Mathieson Chemical Corp., has been elected to the



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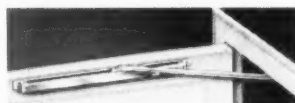
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GAZETTE

board of directors of the Producers' Council, Inc.

CHARLES D. MORRISSEY PE has been appointed to a partnership in the architectural and engineering firm of Praeger, Kavanagh and Waterbury, New York City.

JOSEPH B. KLEIN AIA, formerly of Voorhees, Walker, Smith, Smith and Haines, was recently appointed to New York City's Board of Standards and Appeals.

GERALD D. SORENSON, architect, has joined the staff of Burke, Kober and Nicolais, a Los Angeles architectural and engineering firm.

WILLIAM A. ERNEST PE has joined the firm of Associate Designers, Inc., of Maplewood, N. J.

MIANULLI, PADRON, GUARNIERO, CAMPBELL, SCHWARTZ is the name of a new consulting organization providing professional services in the fields of civil, structural, sanitary, mechanical and electric engineering and construction. The main office of the firm is located at 185-87 Montague Street, Brooklyn, N. Y.

ANGUS MCCALLUM AIA, a former partner in the Kansas City architectural firm of Kivett and McCallum, has returned to independent practice with offices at 1221 Baltimore Avenue, Kansas City, Mo. Clarence Kivett AIA and Ralph E. Myers AIA will continue their practice as Kivett and Myers at 1016 Baltimore Avenue, Kansas City.

HAROLD MARKS PE has been named head of the traffic and transportation division of Victor Gruen Associates, of Los Angeles.

JORGE LUIS DIVINO, exiled Cuban architect, has been appointed to the faculty of the School of Architecture, University of Texas for the 1961-62 session.

JOHN A. S. FORNARA AIA has been appointed Vice Consul for Italy in Atlanta, Ga.

A. F. SPILHAUS was recently named U. S. Commissioner to the Seattle World's Fair, which opens April 1962.

office announcements

ENGINEERS, INCORPORATED, have moved to 20 Mount Pleasant Avenue, Newark, N. J.

KELLY and GRUZEN, architects-engineers, formerly of Newark, have moved their offices to 44 Oakland Road, Maplewood, N. J.

HARVEY C. CURRY, architect, has moved to 3409 Stardust Court, Albuquerque, N. M.

HENNINGSON, DURHAM and RICHARDSON, architects, engineers and planners have moved to 3555 Farnam Street, Omaha 31, Nebraska.

GOLDREICH, PAGE and THROPP is a

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FORECAST

CONSTRUCTION IN AN EXPANDING ECONOMY: 1960-2000



New construction activity in the United States may double during the next 15 years, and double again during the last quarter of this century. Specifically, it is expected to rise to approximately \$107.4 billion by the year 1975, and \$218.7 billion by 2000 (table 1).

The anticipated 1975 figure is spread fairly evenly among the major types of construction, except that residential and highway activity are expected to increase by more than double. On the other hand, during the

last quarter of this century, expenditures for all major types of construction *except* private residential and educational will probably more than double. These two categories are expected to be stimulated prior to 1975 by dynamic factors which will push activity to exceptional peaks during that period.

The rise of new construction expenditures from 11 per cent in 1960 to nearly 13 per cent of Gross National Product in 1975 will result from an increase in the number of adults and

from technological advances.

Growth slow down in the seventies

As the expansion in the growth rate of the economy begins to slow down in the seventies, stepped up advance in new construction is expected to end. Thus, new construction activity will represent only a modestly smaller proportion of Gross National Product in the year 2000 than it did in 1960. Nevertheless, in only 16 of the past 40 years has there been as high a proportionate expenditure for new construction as is expected by 2000. In no past year was the proportionate expenditure quite as high as it is expected to be by 1975.

Proportionate expenditures for public construction will undoubtedly be higher in 2000 than in 1960, but those for private construction lower. Public construction will increase to 33 per cent of total construction in 2000, compared with 29 per cent in 1960.

Repair expenditures to rise

Maintenance and repair expenditures are estimated to total approximately \$31 billion in 1975 (in 1960 dollars)

and \$70 billion in 2000, compared to \$20 billion in 1960:

Year	Total	Private, nonfarm	"Other"
1959	\$19.3	\$ 7.5	\$11.8
1975	30.8	10.8	20.7
2000	69.7	17.8	51.9

Meaning of the construction outlook

Implications of this outlook go far beyond the effects of greater activity on the construction industry itself. The speed-up in construction, foreseen especially in the seventies, will have a stimulating effect on the total economy. Thus, while construction itself reflects economic growth, it also induces growth in other areas.

Among the more obvious side effects of the construction levels foreseen in the next 40 years are the demands on the labor force, and the demands for materials and equipment. Despite the gains in productivity which are sure to develop over the coming decades, the number of construction workers required to erect projects accounting for hundreds of billions of dollars of expenditure will necessarily increase.

To fulfill construction labor requirements, an accelerated apprenticeship

TABLE 1.—New Construction, 1960-2000
(in billions of 1960 dollars)

Type of construction	1960	1975	2000	Per cent increase	
				1975/1960	2000/1975
Total new construction	\$55.6	\$107.4	\$218.7	+ 93	+104
Total private	39.6	75.5	147.3	+ 91	+ 95
Private residential (nonfarm)	22.5	45.5	74.2	+102	+ 63
Commercial and industrial	7.0	11.9	29.4	+ 70	+147
Public utilities	5.3	9.2	22.8	+ 74	+148
All other private	4.8	8.9	20.9	+ 85	+135
Total public	16.0	31.9	71.4	+ 99	+124
Educational	2.8	5.5	9.2	+ 96	+ 67
Highways	5.5	12.1	27.5	+120	+127
All other public	7.7	14.3	34.7	+ 86	+143

training program will be needed due to lengthy on-the-job training required to develop requisite skills.

Though cost of materials probably constitutes more than one-third of total construction expenditures, little information is available on the usage of materials for the various types of construction.

Impact on materials demand unclear

Thus, the impact of the construction projections on demand for construction materials is unclear. A revolution is taking place in the development of materials, and during the next 40 years, even if the relative importance of various types of construction does not change greatly, the consumption patterns for different construction materials may be substantially altered. Necessary expansion of present industry capabilities, however, and growth of new industries to supply material needs, are implied in the projections.

Possibilities of greatly improved effectiveness in the organization and methods of operation of the construction industry are also clearly implied. In the past, technological changes relating to construction have come slowly.

Today, however, many developments raise prospects that future methods may differ as much from present ones as a modern automated, line-operated factory differs from handicrafts.

Inherent in an expanding construction picture are the following elements: more utilization of land resources, growing problems of conservation and development, new and greater outlets for savings, and continued increase in mobility of population.

The growth of metropolitan centers has called for greater intensification of land use in certain areas of the country. The merging of cities illustrates this process.

Land to remain plentiful

Even so, no overall shortage of land for construction purposes is anticipated for the next 40 years as a result of the enlarging network of highways and speeded up transportation. This will have a moderating influence on concentration in large urban areas and will result in development of smaller communities.

By the year 2000, new congested areas will lie adjacent to land which is important to the conservation of natural resources, creating a conflict be-

tween use of land for conservation and for development purposes. Even today, zoning regulations restrict the density of building to watershed requirements.

Funds present, also inflation

The funds needed to finance the level of private construction forecast for 1975 will probably be available. The high construction levels may be inflationary, however. Fortunately, the acceleration in growth of the total economy which may develop in the mid-seventies may modulate the inflationary influence. When standards of living rise rapidly, a lag in consumer expenditure usually occurs so that voluntary savings become somewhat larger than usual.

If such a lag develops, less of the investment expansion would have to come from the extension of credit. The relatively lower level of private construction activity in the year 2000 should reduce problems of inflation related to construction.

The level of public construction, in its historic role in the total economy, will in the last part of this century lead to an increasingly difficult tax problem unless defense and other types of expenditures can be cut back. The general problem of financing public construction is influenced by the fact that public construction expenditures in the year 1975, as related to Gross National Product, are expected to be one-sixth higher than in 1960.

Foresee greater dispersion

The effect of increased construction activity on movement of population is easy to foresee even in the light of recent developments. Revolutionary methods of communication and transportation and the provision of better living facilities, involving national dispersion of all types of construction, suggest a more effective use not only of material resources, but also human.

Though the projections clearly imply higher standards of living and more leisure time, they particularly point up the importance of improvement and expansion of our educational facilities. Attainment of the levels projected for educational construction appears crucial to the fulfillment of the envisioned general economic growth.

This report has been adapted from an article appearing in the Commerce Department's monthly publication Construction Review.

GAZETTE

(Continued from page 3)

new consulting engineering firm located at 257 Park Avenue South, New York City.

ERNEST J. KUMP FAIA was named adjunct professor of architecture, Columbia University.

ROBERT L. DURHAM FAIA, partner in Durham, Anderson and Freed, was elected director of Northwest District, AIA, at the recent regional conference.

THOMAS W. MACKESY FAIA, profes-

sor of regional planning and former dean of the College of Architecture, Cornell University, has been named dean of the faculty at Cornell.

WILLIAM J. BAIN, JR., AIA, has been named a partner in the Seattle, Washington, architectural firm of Naramore, Bain, Brady and Johnson.

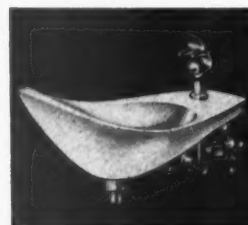
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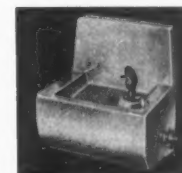
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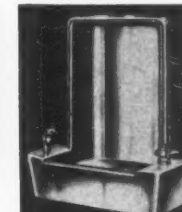
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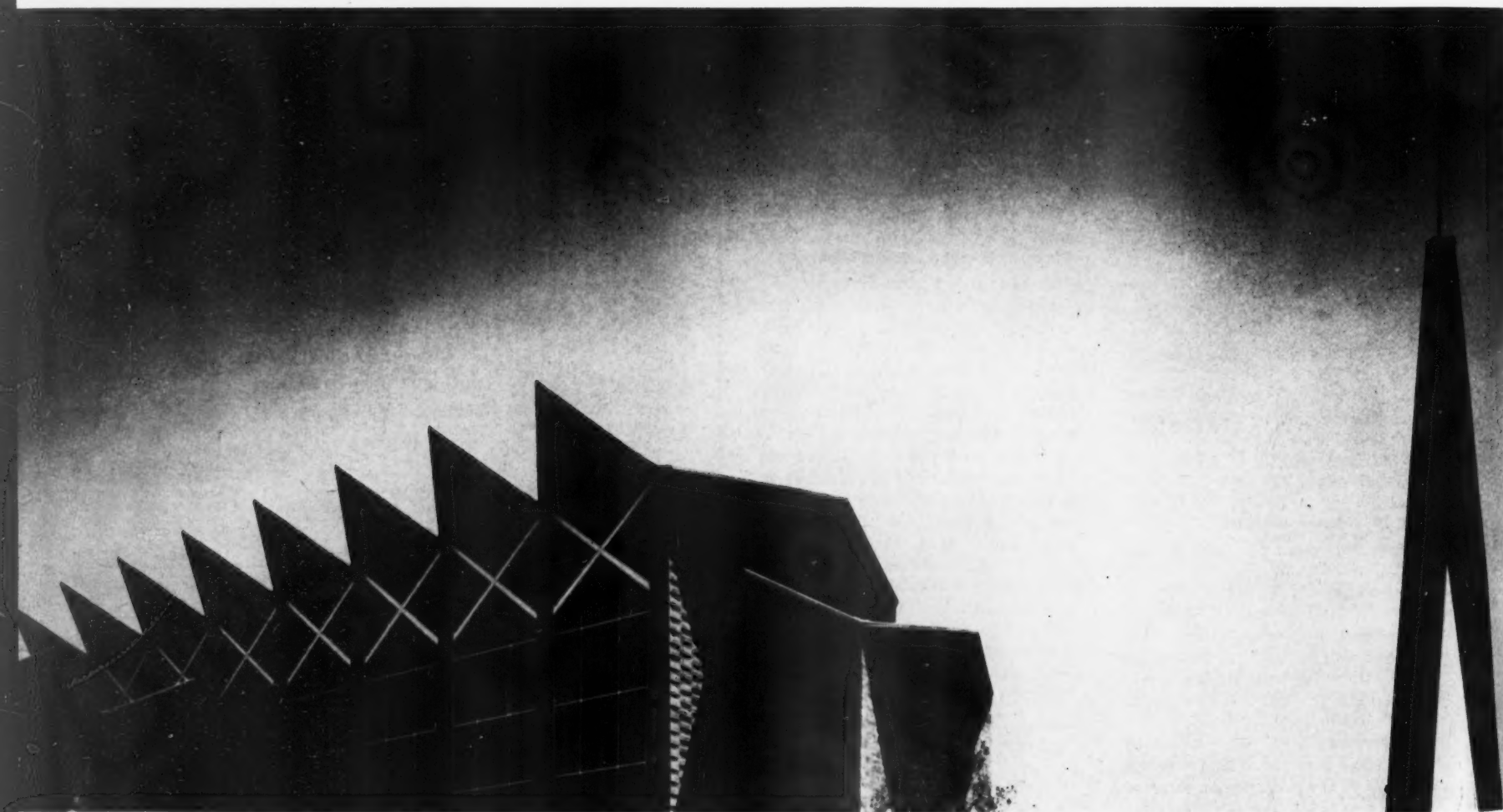
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A|E NEWS

FIRST METHODIST Church Sanctuary of Glendale, Calif. recently completed has a roof of post-tensioned reinforced concrete thin-shell panels which do not exceed a depth of 3" over a total span of 50'. Columns are placed so that their axes form an angle of 45° with the nave, so as to resist seismic stresses. Architects are Flewelling and Moody, who also did structural design in consultation with T. Y. Lin and Associates. Acoustical consultant was Leo P. Del Sasso. (Photo by Julius Shulman).



AIA picks 1962 Convention theme

"New dimensions of architectural practice" will be the theme of the 1962 AIA Convention, scheduled to open on May 7 in Dallas, Texas. This theme is to be developed in a series of four sessions, entitled: 1 social dimension of design, 2 new dimensions of architectural knowledge, 3 Little Rock—dimension of development, and 4 a case history of expanded services.

In another development, the following have been appointed as members of the jury of the 1962 AIA National Honor awards program: A. G. Odell Jr. FAIA, Karl Kamrath FAIA, Dean Charles R. Colbert AIA, Paul Hayden Kirk FAIA, and Paul M. Heffernan FAIA. The Jury will pick its own chairman when it meets. Judgment of submissions will begin on January 29, in Washington, D. C.

Henry L. Wright FAIA of Los Angeles has been nominated for the AIA presidency by members of the Maine, Washington-Metropolitan, and Pasadena chapters of the Institute. Wright is now serving his second term as first vice-president of AIA.

A/E's to survey shelters

The Defense Department, through the Army Corps of Engineers and the Navy Bureau of Yards and Docks, is engaging architects and engineers to conduct a national survey of fallout shelters. There are, reportedly, still openings in the program, although arrangements have been completed in some areas.

Further information about the program is available from Naval District Public Works Officers or U.S. Army Engineer District offices.

Shelter analysis courses offered

The Federal Government, as part of its National Shelter Program, has arranged for a series of two-week "Fallout Shelter Analysis" courses, to be held at ten schools and universities in different parts of the country.

First priority will be given to architectural and engineering personnel needed for the nationwide shelter survey (see above). The Army Corps of Engineers and the Navy Bureau of Yards and Docks District Offices will be given quotas to fill this requirement.

In addition to these quotas, architects and engineers from firms engaged in the design of commercial and institutional buildings will be



SKETCH SHOWS what may become Boston's tallest office building, to be built on land recently bought by British investors for \$800,000. Frederick A. Stahl and Hugh A. Stubbins FAIA (architects) and William J. LeMessurier (structural engineer) have formed a group known as "Pearl Street Associates" for design of the project.

35-STORY OFFICE building scheduled for Chicago's Loop will employ a "stressed skin" technique involving a structural exterior skin, making possible 37' wide bays. Building at right is the Chicago Temple. Architects are Skidmore, Owings and Merrill. (Rendering by Rudolph).



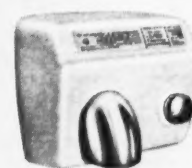
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nominated for attendance by each of the eight Civil Defense Regional Directors.

There will be no fee for the courses; however, the government will not pay other expenses for non-federal employees.

An appropriate certificate of proficiency in fallout shelter analysis will be issued by the Department of Defense to individuals upon successful completion of the course.

Additional information is available from Regional Directors of Civil Defense located at: Oak Hill Road, Harvard, Mass.; Olney, Maryland; P.O. Box 108, Thomasville, Ga.; Battle Creek, Mich.; P.O. Box 2935, University Hill, Texas; Denver Federal Center, Building 50, Denver 25, Colo.; Naval Auxiliary Air Station, Santa Rosa, Calif.; and Everett, Wash.

Boston competition announced

A competition to select an architect for Boston's new City Hall has been announced by that city's Government

INTERIOR OF repertory theater for Lincoln Center, New York shows main auditorium in its proscenium arrangement. Alternate arrangement allows a "thrust stage." Architect is the late Eero Saarinen in collaboration with stage designer Jo Mielziner. (Photo by Ezra Stoller Associates).

Center Commission. The preliminary stage of the competition will close on January 17, 1962, at which time eight finalists will be selected. These eight will be paid \$5,000 each to prepare final entries which will be due April 25.

The building will be the most important one in the government center, a project of the Boston Redevelopment Authority aimed at revitalizing the oldest part of the historic city. Maximum gross floor area of the building has been set at 500,000 square feet.

The jury for the preliminary stage will be Pietro Belluschi FAIA, Boston; Harold Hodgkinson, chairman of the board of William Filene's Sons; Walter A. Netsch AIA, Chicago; Ralph Rapson AIA, Minneapolis; and William W. Wurster FAIA, San Francisco.

The jury for the final stage will include these five men plus O. Kelley Anderson, president of the New England Mutual Life Insurance Company, and Sidney R. Rabb, chairman of the board of Stop and Shop, Inc.

Program and entry forms are available from Lawrence B. Anderson, Government Center Commission



of the City of Boston, One Court Street, Boston, Mass.

Architectural museum for Milan

An architectural museum, inspired by Mrs. Louise Mendelsohn, widow of Eric Mendelsohn, will soon become a reality in Milan, Italy.

The new International Museum of Modern Architecture will be built under the patronage of the City of Milan, with the support of Milanese industries and banks. It will include drawings, photographs, models, writings, and original work of modern architects. The building is being designed by Italian architects Brunati and Mendini.

CEC adopts index system

Among the measures adopted by the Consulting Engineers Council's semi-annual convention in Miami Beach, November 1-4, was an indexing system for filing manufacturers' technical data and catalogs for use by engineers. The system, which is divided into four major sections, is designed to function in the same way as the AIA file system, and CEC hopes that manufacturers will begin

using its system in the same way they now use the AIA system.

Among other results of the meeting were the approval of a new CEC mechanical electrical "special conditions of the contract"; clearance to proceed with a professional insurance program for consulting engineers; reiteration of the Council's opposition to competitive bidding; and an invitation to President Kennedy to make extensive use of consulting engineers in the Government's fallout shelter survey program.

CEC president King reported that the Council plans to retain a managing director and move its headquarters to Washington, D.C. by the time of the annual meeting in May in New Orleans.

Incorporation laws expanding

Fourteen States have passed legislation this year which allows self-employed professionals to incorporate or form associations, taxed as corporations under U.S. laws, and thus becoming eligible for tax relief on retirement plans. Four states—Ohio, Oklahoma, Wisconsin, and

Florida—allow members of all professions to incorporate. Six others—Pennsylvania, Illinois, Tennessee, Connecticut, Georgia, and Texas—allow all professions to form associations, making them eligible for tax benefits. In Minnesota, South Dakota, Nebraska, and Arkansas, permission to incorporate is limited to physicians.

1962 Products Register ready

An increase of 40 per cent in contents, in addition to a 40 per cent decrease in price, will mark the 1962 edition of the AIA Building Products Register, which will be ready in January. Product categories have been increased from 18 to 24 and nearly 1,000 abstracts of pertinent ASA, ASTM, Federal Specifications, Department of Commerce, Underwriters' Laboratories, and other standards will be included.

Subscription price for AIA members will be \$15.00 in place of the previous price of \$25.00.

Calls architects 'Fifth Estate'

Hon. John V. Lindsay (Republican, 17th congressional district, N.Y.),

in urging architects and their associations to support and direct their representatives in government in solving urban problems, pointed out that such association constitute the "Fifth Estate" in Government. He made these remarks during the concluding address at the New York State Association of Architects convention late in September.

Lindsay went on to note that there is now considerable evidence that the "sledgehammer approach to urban renewal, where entire districts have been obliterated" has been the wrong approach. "By some it is already considered archaic. Spot renewal and neighborhood urban improvement is considered more sensible as well as more humane," he concluded.

Frederick H. Voss AIA was elected president of the association. Voss is a member of the firm of Kiff, Colean, Voss and Souder.

Northwest region elects Durham

The Northwest Regional Conference of the AIA, which was held September 30-October 6 in Honolulu, elected Robert L. Durham FAIA regional di-

rector to succeed Harry Weller AIA in May. Durham is a partner in the firm of Durham, Anderson and Freed in Seattle.

Ecumenopolis, the future city

It is only by moving at the same speed as a moving train that such a train can be boarded; likewise, if planners and architects are to regain control over our city environment, they can do so only by "keeping track", or keeping up with, its growth and evolution.

This was stressed by Dr. Constantinos Doxiadis, the Greek planner, in a lecture which formed part of the Pratt Institute school of architecture series entitled "Presentations in urban design." In his lecture, Dr. Doxiadis traced the growth of the city from its beginning as a settlement through its various stages—which he has called the static city, dynapolis, metropolis, megalopolis, and, in its most extended form, ecumenopolis.

Dr. Doxiadis compared today's cities to a human body whose heart is being overtaxed, and on which unskillful surgery is being performed.

Calling inevitable the day when all will be one big city dotted about with variously sized islands of countryside, he advocated as a solution an approach which would not burden the hearts of existing cities with more and more functions, but would rather build new, separate cities with an independent existence of their own.

Dr. Doxiadis did not feel that current urban renewal practice has provided adequate solutions.

Plagues and blessings

In a recent speech before the New York chapter of the Producers' Council, professor Sybil Moholy-Nagy of Pratt Institute called upon members to ask themselves not only the questions "does it work?" and "is it economical?", but also "is it agreeable to the eye?" and "has it meaning in the context of the building?"

Prof. Moholy-Nagy, who spoke on the subject "Plagues and blessings of architectural materials," told designers in the building materials industry that they "are becoming more and more the binder between mass-

fabrication and the quality of human environment."

Cites "geographical engineering"

The possibility of "geographical engineering" through the use of nuclear power was forecast recently by Dr. G. Brooks Earnest, the new president of the American Society of Civil Engineers, at its annual meeting.

Dr. Earnest pointed out that at the tests at Nevada and Eniwetok a great deal was learned about the earth moving potentialities of thermonuclear explosions. "The tests suggest a new field of geographical engineering," he declared. "On the northwest coast of Alaska, if all goes well, there will soon be an entire harbor excavated by nuclear explosions. The savings on such a project can be calculated."

Rome fellowships offered

The American Academy in Rome has announced a limited number of fellowships for mature students and artists for the 1962-63 year. Fellowships in architecture and landscape architecture will be awarded on evidence of ability and achievement and are open to citizens of the

MODEL PHOTO of Evergreen Plaza shopping center, Chicago, shows the way it will appear after one million square feet of shopping facilities and parking are added. Architects are Skidmore, Owings and Merrill.

United States for one year beginning October 1, 1962, with a possibility of renewal.

Applications and submission of work must be made by December 30, 1961. Additional information about the fellowships is available from Miss Mary T. Williams, executive secretary, American Academy in Rome, 101 Park Avenue, New York 17, N.Y.

City planning fellowships

The Sears-Roebuck Foundation has announced the sixth series of graduate fellowships for city planning and urban renewal. Men and women who need financial assistance and who have not been full-time graduate students of city planning are eligible.

Information and applications, which must be submitted by February 1, 1962, are available from The Sears-Roebuck Foundation, City Planning Fellowship Program, 3333 Arthington Street, Chicago 7, Illinois.





Realizing Accurate Cost Control

One aspect of the architect's service which is being stressed increasingly by cost-conscious owners is the accuracy of estimates and control over construction costs. One reason why potential clients approach the so-called package dealer is because the latter has been able to provide him with close cost figures and has seen to it that they are adhered to. How this may be done effectively in the architect's office is described in the following article, where the procedure outlined has been followed successfully by the author's office, Victor Gruen Associates.

by Rolf Sklarek, AIA, CSI

Holding anticipated construction costs in line and having the completed project conform cost-wise to the original target is particularly difficult in an architectural office where questions of design sometimes clash with the stark necessity of holding final costs of the completed project within predetermined bounds.

Although it is relatively simple to estimate costs of a project after all contract documents have been prepared, plans have been drawn, and specifications written, the task of preparing a realistic preliminary construction cost budget, which can be adhered to during the time it takes to plan, design, and finally construct the project, is a more difficult task.

Building contractors estimate construction costs day in and day out, basing their estimates on completed documents. Architects and engineering firms, however, must prepare preliminary budgets and estimates on the basis of rather loose descriptions of the project, then design and engineer the work so that it can be constructed within limits of the economic program established in the very beginning. This places the architect in a position of extremely great responsibility and requires employment of special skills which, until recently, were not even taught in the schools.

Estimates are required

The standard contract documents between owner and architect state clearly that the architect will prepare preliminary cost estimates only if so required by the client, and that he will not guarantee the accuracy of such estimates; but it is none the less true that nowadays such estimates are always required, and that owners tend

to give as much importance to the validity of budgets and estimates as they do to questions of design.

The well-known complaints of owners about exceeded construction cost budgets are harmful to the profession; and the solution is not necessarily an experienced estimator within the firm. Even the best and most experienced estimator working independently in the best equipped office, with the most extensive library at his finger tips, will see his estimates and budgets fail when a designer in another department, working independently, makes decisions which influence the project cost.

Similarly, in the production department, budgets are influenced by the method of presentation and detailing of working drawings, and a specification writer can make or break the best laid plans of the estimator by his choice of specification language.

Checks against progress prints

In order to counteract owners' doubts as to the reliability of architects' construction cost budgets, many offices have recently had their estimator check his budget regularly against progress prints of the work. Such checking and rechecking of the original budget does not, however, solve the problem of cost control.

Such procedure at best constitutes a somewhat haphazard check after the fact, after other independent office departments such as design, production, and specification have made their decisions. Such a lack of coordination of effort of the various departments will often produce results disappointing to the owner and expensive to the architectural firm, in more than one way.

Where cost control starts

In reality, cost control does not stop when drawings are completed, specifications written, and these contract documents presented to the owner together with the construction cost estimate. At this point, cost control has not even begun.

The contract documents and the budget must still withstand the "fire

Mr. Sklarek is Director of Construction in the office of Victor Gruen. Born in Germany, he received his architectural training at the Bauhaus. Before joining Gruen he spent three years as estimator and staff designer in various offices and nine years in private practice.

test" of *bidding and construction*. The particular techniques employed in obtaining competitive bids from contractors, the size and quality of the bidders' list, the time permitted for bidding, the type of proposal form used, and the general timing of bidding, have a tremendous influence on the chance of obtaining acceptable bids within the budget limitations. Not even a low bid within the budget signifies the end of cost control. Change orders during construction and field instructions given by supervisory personnel can heavily influence the project construction costs as can extras.

Office initiates new procedure

The office with which the author is associated, several years ago instituted a new cost control procedure. Within the organization the responsibilities for budgeting and cost control have been combined with the responsibilities for related functions which bear on costs. Under this set up, the following activities are combined under and are the responsibility of a *construction department*:

Cost planning

- Active participation in early planning and design conferences.
- Preparation of descriptive preliminary outline specifications.
- Preparation of preliminary construction cost budgets.
- Preparation of lease exhibits, defining landlord-and-tenant work.
- Research into construction materials, equipment, and techniques.
- Maintenance of up-to-date sample room and catalogue files.
- Maintenance of an extensive library of construction cost records.
- Writing of final specifications, technical and non-technical sections.

Cost checking

- Active participation in design conferences.
- Frequent consultation with design, design development, and production department.
- Continuous cost check and specification check of drawings during the design and working drawing stages.
- Independent check of all working drawings for clarity, bid-ability, build-ability, and consistency, accepting them, after corrections have been made, for use during bidding and construction.
- Preparation of final pre-bidding construction cost estimates.

(Continued on page 12)

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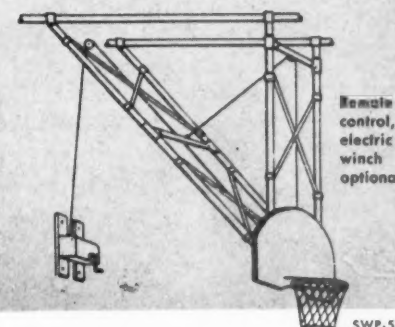
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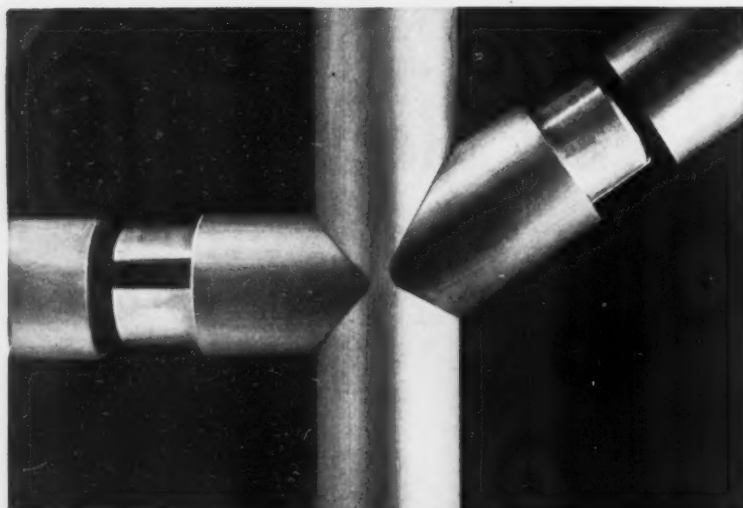
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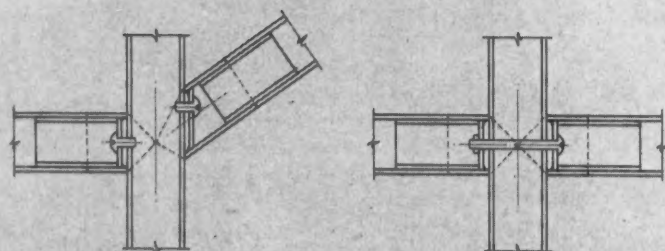


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ACCURATE COST CONTROL

(Continued from page 11)

Cost control

- Assistance to owner in obtaining bids, establishing and following through on bidding procedure.
- Issuance of clarifying bulletins to bidders during the bidding period.
- Counseling owner on bid analysis.
- Assistance to owner in letting of contracts.
- Supervision and inspection of actual field construction.
- Processing of shop drawings and of submitted samples.
- Keeping of construction cost accounts.
- Issuing of change orders and payment certificates.
- Analysis of final project construction costs and filing of results in the cost library for future cost planning.

Construction director is appointed

While the above is only a partial listing of activities, it does illustrate the combining of the estimating department, the specification department, the checking department, and the construction department into one construction division, headed by a director of construction.

To demonstrate how this system works to the architect's advantage even on smaller projects, the following data have been taken from the files of a medium sized shopping center project currently under construction in one midwestern state:

March 1959

The owner intends to build a shopping center on a certain site and requests an opinion as to whether such a project can be built within a budget of \$14.00 per sq. ft. A feasibility report is prepared including a preliminary construction cost budget which indicates a cost of \$14.04/sq. ft.

July 1959

A recheck of the original budget report is made based on preliminary drawings, which were prepared upon owner's instruction to proceed, indicating a cost (now with fewer contingencies) of \$13.43/sq. ft.

September 1959

Continuous cost checking has taken place during the design development stage. The owner decides to increase the scope of the project by including certain turnkey work formerly excluded. An estimate of such turnkey work is prepared, based on quantity takeoff and unit pricing, and indicates

that the cost of the project will be increased by \$125,000.00 .. \$0.68/sq. ft.

December 1959

Square footage areas of the project have been revised during the design stage and a preliminary estimate has been prepared indicating a total cost including the turnkey work of \$2,789,900 \$14.15/sq. ft.

January 1960

Certain design changes requested by the owner are again evaluated by a revision of the preliminary estimate indicating a cost of \$2,748,400 \$13.48/sq. ft.

Test bid sought from contractor

February 1960

The owner, having to depend upon the reliability of a very tight budget, decides to submit the preliminary drawings and preliminary specification, upon which the December estimate was based, to a local building contractor, requesting a check on probable construction costs of the project. The contractor's estimate, including certain specified allowances, indicates a cost of \$2,606,850 ... \$14.08/sq. ft.

May 1960

During the start of working drawings the owner requests an increase in the scope of the work, consisting of covering and enclosing the project's central mall. A take-off estimate indicates that the project cost total will be increased by \$200,000 \$1.08/sq. ft.

August 1960

Complete contract documents are issued for competitive bidding. A final revision of the construction cost estimate is being prepared, embodying and evaluating all the information transmitted to bidders in the contract documents, as well as in the form of clarifying bulletins issued during the bidding period. Since not all items included in the estimate are going to be included in the general contractor bid (such as landscaping work and certain other allowances), the bid items are abstracted from the estimate and indicate a total anticipated bid of \$2,410,000 \$13.02/sq. ft.

Estimate not aimed at low bid

It should be noted here that all estimates contained a statement in the preamble indicating that the estimate total is not aimed at the lowest possible bid but rather at a point somewhere within the lower one-third portion of a reasonable range of bids from low to high.

September 1960

Bids were received from eight general contractors. These bids ranged from a low of \$2,371,872 (\$12.81/sq. ft.) to a high of \$2,491,191 (\$13.46/sq. ft.) An analysis of bids received indicates that the one-third point of the bidding range is at \$2,411,646, which is \$1,646 over the last estimate and indicates a cost of \$13.03/sq. ft.

August 1960

A contract was signed between the owner and the successful low bidder one week after the bid date in September 1960 and the project is currently under construction. Construction cost accounting, which started with the contract sum of \$12.81 per sq. ft., which takes into account the value of change orders issued during construction, and which adds to the foregoing the value of items not included in the general contractors' bid, indicates that the project (exclusive of added scope of turnkey work and covered mall) will be completed well within the target of \$14,000 per sq. ft. quoted in the feasibility report of March 1959.

The above facts from a project file, while accurate, are by no means complete; they refer only to the tangible cost figure results and do not indicate the multitude of activities carried on by the construction department in terms of cost planning, cost checking, and cost control from the first response to a client's inquiry to the successful completion of a construction project.

Experience aid to accuracy

Not all construction projects and estimates achieve a similar accuracy. This is particularly true when budgets and estimates are required for types of projects with which the office has had no previous experience. The effectiveness of this office's combined-function construction department, however, is shown by the following statistics, which cover a variety of types of building projects and range from very large developments to small projects in the \$200,000 class, in the course of the last six years:

- No project abandoned once bids were called for.
- Bids obtained within 1.4 per cent of estimates.
- Projects completed with 2.7 per cent of budgets.
- At no time did estimates end up as the "low bidder."



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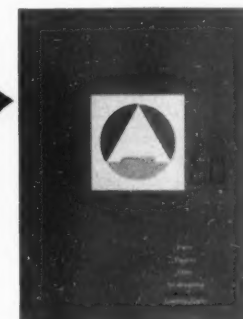
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The following article sets out the uses and limitations of building design by computer, describes what is meant by programming, and includes an illustrative example of data as it is obtained from such a computer. The author sees present application of computers chiefly in structural design, but also to a smaller degree in mechanical engineering and in some facets of architectural design. The article has been adapted from a paper delivered at a conference of the Building Research Institute in Washington earlier this year.

by John W. Dawson AIA*

The basic element of any computer is a memory device. A common type is magnetic, similar to a tape recorder, except that the magnetic material is on a rotating drum instead of a tape. There are input and output devices, such as a typewriter or punches and readers for paper tape or cards. In between are a complex of electronic tubes or transistors and wires.

The memory device is divided into compartments, a few thousand of them in a small computer. Each compartment may hold a data number or an instruction which tells the computer what to do.

To demonstrate the way a computer operates, imagine a rack with two thousand pigeon holes. In some of them are data numbers and in others are instructions. You have a scratch pad and pencil. You are told to go to 157 for your first instruction. The instruction in 157 tells you to go to 350 and copy the number you find there. The next instruction in 158 tells you to go to 460 and multiply what you have by the number you find there. The next instruction in 159 tells you to add the number in 512. The next instruction tells you to store your answer in 628. You continue until an instruction tells you to stop, at which time you should have a correct answer to a problem.

Reduce to routine steps

A computer can solve any numerical

** The author is with the firm of Ellerbe and Company St. Paul, Minn. He holds a degree in architecture from the University of Minnesota, and is registered as an architect in Minnesota and California. He is also a licensed civil engineer.*

problem that can be reduced to a routine series of steps. The steps can be add, subtract, multiply or divide. Also by use of sub-routines the computer will find functions such as logarithms and trigonometric functions.

There are two main factors which determine whether it will pay to use a computer for a problem. A program of instructions must be prepared. A simple program may be prepared and be ready for use in an hour or less. A complex program for a difficult problem may require months of effort before it will be ready for use.

Generally, if a problem is to be solved at once, it is quicker and cheaper to do it by hand than to write a computer program for it. A program must be used many times in order to recover the cost of producing it.

Preparing for operation

The other limitation is the input-output operation. The input data must be prepared by the engineer. It must then be typed into the computer, or punched on tape or cards which are read into the computer. After computation is completed, the output must be typed, or it may be punched on tape or cards, and run through some kind of printer. The actual computing time may be very short, but these ancillary operations may require more effort than would be involved if the engineer were to solve the problem with a slide rule.

A much used program is for the analysis of rigid frames. It is based on three cycle moment distribution. Part of the input is geometrics; story heights, dimensions of beams and columns above and below, and length of spans. The program will handle up to seventeen spans plus a possible cantilever at each end. The frame may be either steel or reinforced concrete. The rest of the input is loads. The loads may be uniformly distributed, either continuous or discontinuous, or they may be concentrated; each load consists of a dead and live portion. A total of thirty-nine loads can be handled and they may be distributed in any manner.

Find maximum stresses

Several different arrangements of live load are used in the program in order to find maximum stresses at several points. Reactions are found for live load on all spans and for no live load for later use in column and footing de-



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sign. Maximum moments at ends of spans are found with spans adjacent to a joint loaded and the next adjacent spans unloaded. Maximum and minimum midspan moments and an associated reaction, and maximum moments in columns above and below are found.

A companion program analyzes a single span. Under ordinary uniform loading, finding the moment at midspan of a beam is sufficient. In cases of discontinuous loading or unsymmetrical concentrations the mid-span moment may not be the maximum. In these cases the single span analysis can be used. The input consists of part of the output from the rigid frame analysis. The output includes the moment and shear at each concentration and each change in uniform loading, points of zero moment and the moment at the point of zero shear.

Design concrete columns

There are four programs for the design of concrete columns: for tied and spiral reinforcing and for elastic and ultimate strength theory. For all four programs the input consists of dead load, total load, bending moment, assumed dimensions and story height.

The computer finds the weight of the column and adds it to the loads and finds the required steel area, and the steel area as a percentage of the gross area; it then makes a selection of reinforcing bars. These programs make use of what computer people term a logical decision. Such decisions are made on the basis of some number being positive, negative or zero. After the required percentage of steel is found, it is subtracted from the maximum allowable percentage. If the result is negative, the maximum has been exceeded. The computer will then increase the column size and recompute, and repeat the process until an allowable percentage is found.

Include wind, earthquake

Four more programs do the same job of designing columns including axial loads and bending due to wind or earthquake.

Another program selects steel column sections. The properties of 10-inch, 12-inch and 14-inch sections are stored in tables in the memory, including 14-inch cores with cover plates. A section is selected for combined axial load and bending due to gravity loading. Selections are made at increased stresses including wind or earthquake

in the x direction and the y direction. The largest of the three selections is typed out with a signal indicating whether the selection is controlled by gravity loads or by wind in the x or y direction.

Columns subject to gravity loading are selected from tables. When wind or earthquake is involved, the allowable stress for gravity load is different from the allowable stress for wind or earthquake, and tables for this condition are not available.

Computer designs footings

A footing design program will find the horizontal dimension for a square footing, the depth, and selects the size and number of reinforcing bars. The bars selected are the largest size that will meet the requirements for perimeter and area. If the spacing of the bars exceeds a prescribed maximum, a second selection is made using smaller bars with a spacing that will come within the prescribed limit. (See example and tabulation sheet, p. 19.)

When footings are designed by hand it is customary to assume a depth and then work through the solution to find whether the assumed depth is satisfactory. A direct solution for the depth involves a fourth degree equation in one unknown, which is a bothersome thing to solve by hand. The computer makes the direct solution, taking the fourth degree equation in stride, solving it by Newton's method of successive approximations in about four seconds.

Stresses in a rigid frame

This office uses a program that finds the stresses caused by wind or earthquake in a rigid frame structure. It handles one floor at a time rather than one bent at a time. The input consists of the geometrics of the members and the magnitude and location of the applied horizontal force.

The program computes joint co-efficients, finds the centroid of the co-efficients and their moment of inertia about the centroid in both x and y directions. It distributes the horizontal force to the columns in proportion to the joint co-efficients and applies a correction due to rotation caused by eccentricity, finds the moment in each column and the moments and shear in each beam.

Compute ductwork

Our mechanical engineers have found one excellent use for the computer in

this work. Duct systems are designed on the basis of equal pressure drop from the fan to each outlet. An orifice plate is installed in each branch and the orifice is sized to provide a resistance so that the total resistance in all branches will be equal.

One program computes the pressure drop in each branch. The input consists of quantity of air in cubic feet, per minute and the dimensions of each element; straight duct, elbow, take-off, reduction or enlargement. The computer types out the pressure drop for each element and the cumulative total drop.

Another program, given the dimensions of a duct, the quantity of air and the required pressure drop, will compute the dimensions of the hole in an orifice plate. It takes a few weeks for an engineer to do this work by hand for a large air conditioned building. The computer takes only a few hours.

Architectural design uses

Architecturally there is not so much for the computer to do. One program that has been used occasionally computes floor elevations for curved floors in seating areas of theaters or auditoriums. Another helps the acoustical consultant in determining resonant frequencies in rooms.

Two other programs may be classed as architectural. One computes the number of square feet and cubic feet in a building and the cost per square foot and cubic foot. The other works from the breakdown of cost furnished by the contractor and computes the percentage of the total cost and the cost per square foot and cubic foot for each item of cost listed in the breakdown. This work could probably be done cheaper by hand. But by the time the figures are available, the men who worked on the job have moved on to the next job and their work should not be interrupted. This work is used as fill in for the computer when it is not otherwise occupied.

Miscellaneous uses

There exist some miscellaneous programs which are occasionally useful. There is a quadratic equation solver, and another for equations up to the fifth degree. A program solves problems of circles and related points. It is useful for computing dimensions of round building units. Another solves up to 15 simultaneous linear equations.

An excellent application for a computer is the creation of tables. This

office recently wrote a program to produce tables of composite beams, steel beams with a concrete slab over them. For each beam and each width and thickness of slab, the moment of inertia, the section moduli at bottom and top of the steel beam and at top of the slab are typed out. The program was written in less than an hour. In about twenty minutes, 288 of these values are computed and typed out in tabular form on a 11" x 17" sheet. Thin paper is used from which copies can be made in an Ozalid printer.

Tables for composite beams

Published tables of the properties of composite beams are available, but they do not include the smallest beams; also, the steel producers have introduced a few additional weights of beams since the tables were published. The tables we have seen are based on a value of 10 for n , the relative moduli of elasticity of steel and concrete. For some concrete produced today a value of 8 should be used.

Jobs such as table production can be done "off peak," so the cost of machine time may be considered to be practically zero.

The law of diminishing returns applies to hand calculation in structural design. If the amount of hand work were increased materially, it would increase the cost of designing so that higher fees would be necessary. It is doubtful whether enough economy of construction would result to justify the higher fees, so refinement of design must stop somewhere and an approximation known to be on the safe side must be used. The computer can produce more refined calculations with resulting increased economy of construction. On a recent project 100 tons of steel were saved by running the wind analysis program three times after adjusting the size of some members.

Computer is fast worker

Speed is available when needed. Recently this office used the computer in design of the steel frame for a large office building. The result was that steel for the frame was delivered from the rolling mill two to three months earlier than if calculations had been done by hand.

There is a release of manpower. The engineers can apply more of their time to matters requiring judgment and less time to routine number work.

The question whether the computer

has reduced the cost of doing work is difficult to answer. The trouble is that the work is done in a different sequence when using the computer, so a direct comparison is not easy. Where a check was made some economy was indicated. Certainly it has not increased costs and probably has decreased them somewhat.

How efficient is it?

It was estimated originally that the computer would be used about half the time for productive work. The other half would go for production and checking out of new programs, reruns resulting from errors by the operator or an engineer, down time for maintenance and standby time during a temporary lack of work. During the first two years of operation, productive time was, in fact, almost exactly 50 per cent.

Production cost could be improved with a larger volume of work. This office has been entering data into the computer directly by typewriter and typing out the answers the same way. This is a relatively slow process. For many programs the type-in and type-out take longer than the computation. In this third year of operation the load is still gradually increasing as more uses for the computer are found. Recently there have been periods of several days when the computer could not keep up with the load.

A computer cannot be justified economically unless it is kept busy. The minimum staff required is a full time operator. He will have some slack periods, but there is always other work to be done. Instruction sheets must be prepared and input and output forms must be prepared for each program. Punched paper tapes or punch cards must be indexed and filed.

In addition to an operator, a man is needed to write programs. This may be a full time job when a computer is first installed, but after the more important programs are in operation it may become a part time job, and need not all be done by the same person.

This office has about 40 men in its structural section. Our computer is a small one, and the structural section generates most of its load. An organization would have to be of comparable size to support a computer.

Keeping computer busy

For smaller operations, there are other means available. One could solicit cus-

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for

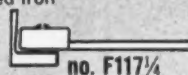
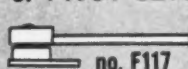
CLASS "B" and "C" openings



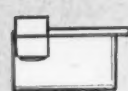
CLOSERS: "F" type UNI-CHECKS
4 spring capacities
N.H.O. 3/4" offset only



or **PIVOT SETS:** primed iron

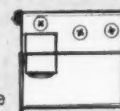


TOP PIVOTS:
primed iron



no. F280
half surface

no. F480
full surface

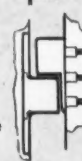


**SIDE JAMB
PIVOTS:**
primed iron



no. FM19
full mortise

no. F219
half surface



An excellent combination. RIXSON offset hung floor installed closers or pivot sets with labeled WELDWOOD FIRE DOORS are now approved by Underwriters' Laboratories for use in vertical shaft, room and corridor partition openings.

From the variety of RIXSON hardware shown, most any installation requirements can be met.

Complete information available on request

THE OSCAR C. RIXSON COMPANY

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IN CANADA:

The Oscar C. Rixson Company (Canada) Ltd.
43 Racine Road, Rexdale (P.O.) Toronto, Ontario

tom computing from other organizations to keep the computer busy. Two or more organizations could embark on a joint venture, dividing the cost in proportion to the productive time used by each. In many communities, custom operators are available.

Care should be used in the selection of a computer. Over a 2 year period there will be a surprising investment in programs. We now have a total of about 60 which would have to be abandoned if a change in computer were made. Advice from a consultant who is not attached to any computer company or from other computer users could be valuable.

Can computers think?

The question is often posited as to whether a computer can think. Intelligent, scientific men give opposite answers to the question. Programs have been written for computers to play checkers. One checker program has been written for a large computer, which stores in its memory the games it has played. When it comes to a situation, it will search its memory to see whether it has met the same situation before. If it has, it checks to see whether it won the game. If it won, it will make the same move as before. If it lost, it will try a different move. This machine is able to accumulate experience and to use the experience profitably to guide its future actions.

Does this constitute thinking?

SHOWN ON opposite page is a sample sheet used in footing design. Written figures are entered by the designing engineer. Data at bottom of sheet gives stresses used for the project. "P" is the deadload soil pressure. Data at top of sheet gives design information for each footing. The "Pu" is deadload on the footing in kips, the "Pr" is total load on the footing in kips, and "T" is width of column or pedestal at top of footing.

At right side is the computer output. The program finds dimensions for the footing based on specified deadload soil pressure and deadload including weight of footing. It finds a depth for the footing to meet requirements for shear and bending due to the total load, dead and live, but not including weight of footing. It finds the number and size of steel bars required, using the largest bar that will provide the necessary ratio between area and perimeter. Program also provides for a maximum bar spacing of 9". If spacing for the largest permissible bar exceeds 9", a second choice is made that will provide the required area of steel and a spacing of less than 9".

Starting at top of sheet, the number "1" is a serial number. "8.88" is length of side of the square footing in feet. "18" is depth of footing in inches, including the required 4" below the steel. "6.56" is the required area of steel in one direction and "26.49" is the summation of perimeters. The next line indicates eleven #7 bars spaced 9.7" on centers. Since this exceeds the specified 9" limit, a second choice is made of 15 #6 bars spaced 6.6" on centers. The designing engineer decides which he wants to use. "3.19" is soil pressure in kips per square foot resulting from combined dead and live load and weight of footing.

SHT OF SHTS

FOOTING DESIGN

0511400// (TAB)S INPUT

0511400..		DATA	LOC	NO
1400 140. @ 53.14000	P D	140	1400	1
1401 234. @ 53.23400	P T	234	1401	
1402 24. @ 52.24000	T	24	1402	
1403 86. @ 52.86000	P D	86	1403	2
1404 146. @ 53.14600	P T	146	1404	
1405 24. @ 52.24000	T	24	1405	
1406 135. @ 53.13500	P D	135	1406	3
1407 222. @ 53.22200	P T	222	1407	
1408 24. @ 52.24000	T	24	1408	
1409 128. @ 53.12800	P D	128	1409	4
1410 217. @ 53.21700	P T	217	1410	
1411 22. @ 52.22000	T	22	1411	
1412 74. @ 52.74000	P D	74	1412	5
1413 130. @ 53.13000	P T	130	1413	
1414 22. @ 52.22000	T	22	1414	
1415 102. @ 53.10200	P D	102	1415	6
1416 176. @ 53.17600	P T	176	1416	
1417 20. @ 52.20000	T	20	1417	
1418 220. @ 53.22000	P D	220	1418	7
1419 387. @ 53.38700	P T	387	1419	
1420 24. @ 52.24000	T	24	1420	
1421 . @ .00000	P D	0	1421	8
1422	P T		1422	
	T		1423	
	P D		1424	9
	P T		1425	
	T		1426	
	P D		1427	10
	P T		1428	
	T		1429	
	P D		1430	11
	P T		1431	
	T		1432	
	P D		1433	12
	P T		1434	
	T		1435	
	P D		1436	13
	P T		1437	
	T		1438	
	P D		1439	14
	P T		1440	
	T		1441	

-- 1442

0511200// (TAB)S

0511200..		DATA	LOC	
1200 1350. @ 54.13500	F C	1350	1200	PSI
1201 20. @ 52.20000	F S	20.0	1201	KSI
1202 2. @ 51.20000	P	2.0	1202	KIPS/SQ. FT.
1203 10. @ 52.10000	N	10	1203	RATIO

9204207// (TAB)S -- 04

0511207..		DATA	LOC	
1207 3000. @ 54.30000	F C	3000	1207	PSI

1208

ADD ZERO (0) FOR FINAL ENTRY IN PD SPACE
 PD IN KIPS PT IN KIPS T IN INCHES

OUTPUT

0690900// (CR)S 0690900.. @

1	8.88	18.	
	6.56	26.49	
	11.	7.	9.7
	15.	6.	6.6
	3.19		
2	6.86	14.	
	3.70	21.16	
	12.	5.	6.8
	3.27		
3	8.69	17.	
	6.47	26.89	
	11.	7.	9.6
	15.	6.	6.6
	3.15		
4	8.49	18.	
	5.95	24.86	
	10.	7.	10.2
	14.	6.	7.0
	3.23		
5	6.34	13.	
	3.41	21.01	
	12.	5.	6.9
	3.39		
6	7.52	16.	
	4.92	23.36	
	12.	6.	8.0
	3.30		
7	11.33	23.	
	11.53	34.31	
	10.	10.	14.9
	20.	7.	6.7
	3.30		

JOB NAME _____
 ENGINEER _____
 DATE _____

The Architect's Office Today: Trends in Efficiency

An A/E NEWS report

A growing dependence on machines to do routine jobs is the over-riding conclusion to be drawn from results of a nationwide random survey of architectural offices recently conducted by A/E NEWS. This dependence extends from small adding machines and the common typewriter to very elabo-

rate machinery such as that used to produce blueprints, black-and-whites, ozalids and other forms of drawing reproduction.

Nor is use of such equipment limited to the larger firms: 50 per cent of architects responding to the survey had 6 or fewer employees on their payroll.

Tables and T-squares

Reaction to the use of drafting machines as a replacement for ordinary or parallel T-squares and triangles was mixed; some architects leave the choice up to the draftsman, others say that they like the machines but have not noticed any particular time saving, and others still claim a time saving with use of machines of 10 per cent and more. Parallel T-squares found general favor over regular T-squares, in terms of both greater speed and greater accuracy.

How often drafting equipment in the office is evaluated in terms of its efficiency was found to vary from "periodically, every six months or so," and "yearly," to "not too often," "usually on change of personnel or remodeling," and "approximately every five years."

Stake in equipment

Investment in the physical equipment of the office as disclosed by the survey varied from a sizable percentage in "durable" drafting equipment (such as drafting tables and stools, lamps, T-squares), to smaller amounts in filing equipment and reproduction equipment (such as copying machines, mimeograph machines, and typewriters). Money invested in non-durable supplies, such as pencils, ink, erasers, and paper approximately equalled the average for reproduction equipment.

The actual average percentage of investment in the "durable," or drafting table type of equipment proved to be in the region of 40 per cent of the total devoted to the physical equipment of the office, with filing and reproduction equipment second with about 21 per cent each; drafting supplies recorded an average figure, among architects responding, of about 12 per cent.

Prints: home or away?

Of the responses, 58 per cent obtain prints by sending their tracings to a commercial printer, 27 per cent do their own, and some 15 per cent generally send tracings out for service on large projects but own reproduction equipment on which they run off prints for small projects or for preliminaries. Office size, as measured by number of employees, had no evident bearing on this breakdown.

As regards reproduction of forms and specifications, 80 per cent, according to the survey, have one or more machines for the purpose, either a

duplicator, a mimeograph or, rarely, a multilith. Of those who have spec sheets reproduced commercially, all prepare their own master sheets.

Use of individual copying machines, based on either the thermal or photographic principle, proved widespread. 96 per cent admitted to owning an adding machine.

A large majority do not find it more efficient to "farm out" their typing, although a few, mostly in the one to seven employee group, said they do occasionally, to handle overloads.

Spreading the word

Use of an intercom system and telephone switchboard proved to be related directly to number of employees. No office with fewer than 15 employees had a telephone switchboard, and, with one exception, no office with fewer than 6 employees had an intercom telephone system. As for a paging system, 37 per cent declared that such a system was justified from the point of view of efficiency; of this percentage, all had 6 employees or more.

On the use of dictating machines, one half of all responses admitted to using them.

The AIA system of filing literature is the method preferred by a large majority of offices responding to the survey. 84 per cent use this system "straight", without modification, a little under 10 per cent prefer the Sweet's system, and the remainder either have a system of their own, or use a modified AIA or Sweet's system (example: by filing catalogs separately).

Morale department

The survey disclosed a wide range of tools used by architectural offices in the interest of a contented staff. These ranged from the hotplate-coffee-pot-watercooler-fan category to more elaborate efforts such as FM and stereo systems, refrigerators, soft drink machines, and even, in one 12 employee office, an automobile.

Excluding those architects who had office space in air-conditioned buildings, 47 per cent found justification in portable air-conditioners, 16 per cent in water coolers, the same proportion provide a refrigerator, and a slightly higher number look favorably upon some sort of coffee making equipment.

Results revealed installation of air-conditioners and fans to be independent of both number of employees and geographical location.

Alterations: A New Measuring Technique

The following article describes a new method of obtaining accurate measurements of structures due for renovation or expansion, by means of a photographic technique.

by Robert M. Austin

The field work required to obtain accurate measurements on existing structures when blueprints are not available can be sharply reduced from that of conventional procedures by means of a recently developed technique employing Polaroid Land photographs.

The Polaroid camera is used as a means of obtaining an immediate visual record, which furnishes the architect with information in many ways more accurate than that obtained by making physical measurements. In addition to providing information which can be readily translated into dimensions, this process also serves as a double check, pointing out numerous details that may be overlooked by direct, piecemeal measurement.

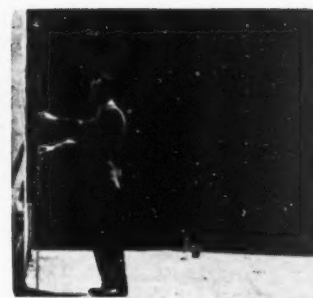
Planes remain true

Reduced to its essentials, the technique (developed by Robert H. Wohleb AIA, an Olympia, Wash. architect) is based on photographs of building elevations recorded so that there is little or no distortion in any of the planes. The photographs are then given to a draftsman, who determines actual dimensions of the structure and its components by using a scale computed on the basis of pre-determined size of structural elements, or of a rule included in the photograph.

With a complete series of photographs before him the draftsman can immediately visualize the structure, and can also study all aspects of it carefully at his own drafting table.

Immediate check possible

With this medium it is possible to check the finished photograph ten seconds after the exposure is made and to make certain at once that the neces-



ASSISTANT HOLDS a 6' rule while photographer snaps picture. Camera must be situated so that it views side (or receding) wall in profile.

DRAFTING TRENDS



New, improved Rotolite Expediter conveniently makes sepia reproducibles and diazo films in addition to low cost whiteprints.

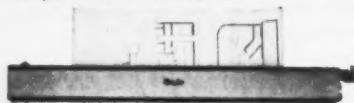
Make whiteprints in minutes

Here's a new, fast, economy whiteprinter that fills a real need in small drafting rooms or large engineering departments.

Workprints for architects, consulting engineers, surveyors, contractors. The Rotolite Expediter can handle all copying needs for the two- or three-man drafting operation, is always ready to cope with rush jobs, even after hours. With Post Super Vapo Papers, print production can be doubled.

Quick checkprints for larger manufacturers. Even huge engineering divisions with their own reproduction departments praise Expediter's practical, on-the-spot convenience for quick copies of preliminary sketches, checkprints, conference data, visual presentations. Hundreds of companies have placed Rotolites in their engineering and drafting rooms for "self-service" whiteprints in a hurry.

No preheating or other delays—Rotolite makes prints immediately. There's a choice of three models to take 18", 27" or 42" wide tracings of any length. Rotolite is easily hung on wall or placed flat on a table top, plugs into any standard convenience outlet. With new dial speed control, you can make cloth and film reproductions immediately, as well as paper prints. For fast developing, choose either economical ammonia tube or new, sealed Thermomatic unit, illustrated below.



Recommended print materials. Use Post diazotype sensitized products—Vapo paper, sepia vellum, cloth or film—for best results. Get full information on Expediter and standard Rotolite whiteprinters from your Post dealer or write Frederick Post Co., 3654 N. Avondale Ave., Chicago 18, Ill.



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sary information has been properly recorded.

Two other advantages of the technique are the economy of using Polaroid pictures and the simplicity of the camera operation.

To obtain accurate results, three steps must be followed. The first requires the photographer to assume a position near the corner of the structure, so that he faces one wall and looks directly down the other. Next, he must hold the camera so that the back—or film plane—is parallel to the plane of the wall he is facing.

Final step critical

The third step is the most critical as it provides the true vertical of the building. Standing so as to sight down the plane of the receding wall, the camera is moved slowly in the appropriate direction until the vertical of the side and rear planes coincide exactly with the vertical of the front and side planes (see fig. on p. 21). The shutter is then snapped.

By following these steps exactly it is possible to obtain a photograph which will permit vertical measurement at any point without fear of inaccuracy due to plane distortion.

After obtaining this vertical reference photo, the next step is to take the necessary pictures for horizontal dimensions. While a portion of this wall may be recorded in the vertical photo, a series of overlapping pictures must usually be taken in order to record all details. This is accomplished by taking a camera position which includes the top and bottom of the structure at a distance from the wall equal to that of the vertical photo. The subsequent overlapping pictures are made as required by moving along the length of the wall while maintaining the same camera-to-subject distance.

Include a rule

In taking photos for vertical or horizontal dimensions, it is advisable to hold a six-foot rule at a specified place, so that the major graduations are discernible in the print. By this method, it is simple for the draftsman to determine measurements of any area or structural feature by using dividers, for comparison with the rule.

If it is not feasible to include a rule, measurements are subsequently made of various elements, such as doors, windows, bricks, blocks, etc., so that these can be used to determine measurements within the photo.

Limitations

Limitations to this technique occur in either of two instances. The first is when a structure is so high as to require backing off such a distance to keep the film back parallel to the vertical planes that markings on the rule become undiscernible in the photo.

The other limitation is found when grade surrounding the structure falls away—or rises—so rapidly as to make it impossible to keep the film back parallel to the walls, and still bring top and bottom of the structure within limits of the viewfinder.

The solution in such cases is to take Polaroid photos of the walls for the horizontal dimensions and then resort to physical measurement to determine the height. Even with this additional effort, the technique is still more rapid and accurate than using the physical measurement method throughout the operation.

Used to record utilities

Another valuable application of the technique is the recording of detailed information on piping and duct work in existing structures. A frequent use in this respect occurs when renovation projects necessitate cutting doorways through existing walls. A major complication in such cases are the restrictions represented by water and gas lines, electrical wiring and heating ducts which must be altered to accommodate the new opening.

Previously, the field man had to make elaborate sketches to identify each utility and measure its location in relation to the proposed alteration. This task can prove very time-consuming and in situations characterized by a complex maze of pipes, wiring, ducts and equipment, it is a simple matter to overlook important details. With a photo of the layout, however, every detail is permanently recorded for careful study in the office, as well as for reference.

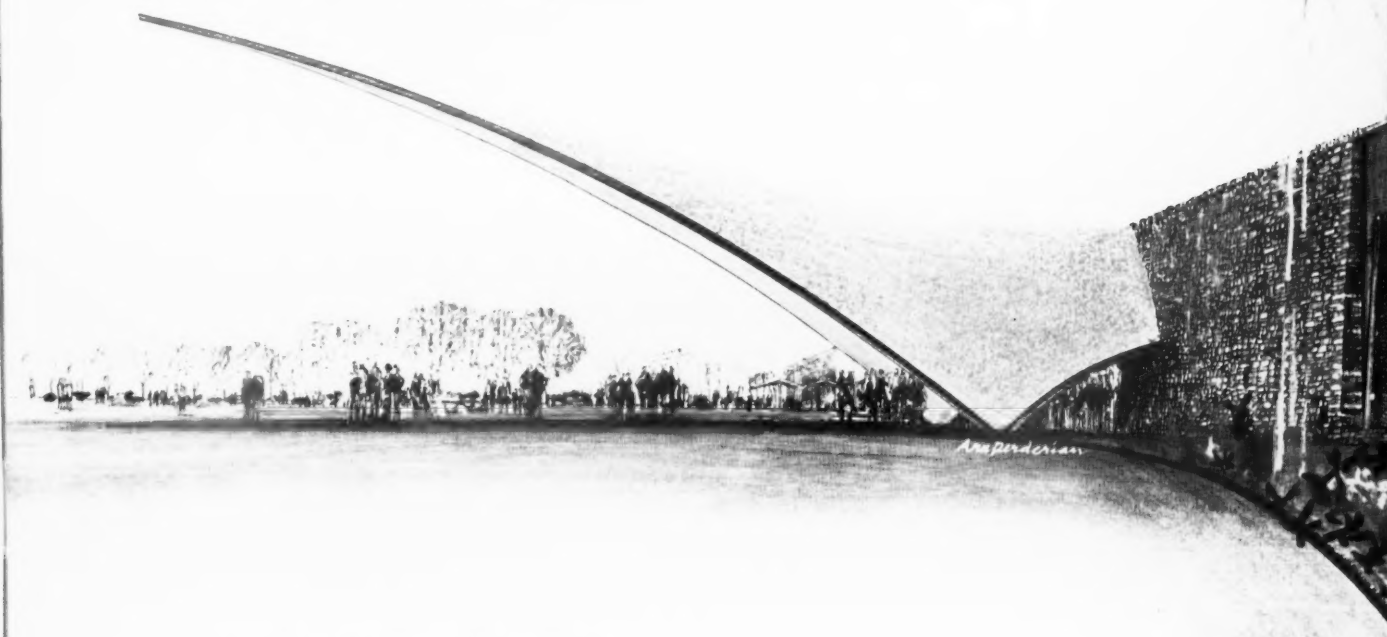
Summary

Once the working drawing stage is reached, accurate physical measurements are made at pertinent points. The primary problem, however, in preparing a preliminary sketch of an existing structure where blueprints are not available is to obtain the basic measurements. It has been found that the photo method gives a greater degree of accuracy than would be obtained by physical measurements made for the same purpose.

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new F/A Roofing by Armstrong

*made for today's imaginative
free form shapes*



Armstrong F/A Roofing provides a colorful,
protective membrane for this soaring entrance canopy.
Willow Grove Bowling Lanes, Willow Grove, Pa.
ARCHITECT: Powers, Daly & DeRosa, Long Beach, Calif.
ROOFING CONTRACTOR: Warren-Ehret Company, Philadelphia, Pa.

F/A Roofing comes in a choice of six basic colors shown below. Non-standard colors can be provided on request. Send the attached card for complete information on Armstrong F/A Roofing.



610 - Gray

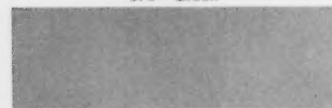


620 - Red

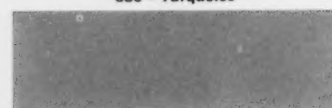
685 - Blue



670 - Green



680 - Turquoise



640 - Yellow

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New Armstrong F/A Roofing

DESIGNED TO SOLVE MODERN ROOFING PROBLEMS

Thin shell concrete and plywood are giving America's skyline a striking new look of free-form beauty. But today's free-form roof decks with their irregular, elliptical, or undulating slopes call for roofing materials with both decorative and protective qualities. Armstrong F/A Roofing is designed especially to meet these requirements. It is a combination of two liquid roofing products applied to form a tough and flexible roofing membrane: F/A 400 Roofing, a neoprene base material, and F/A 600 Roofing, a Hypalon® base coating that forms the finished surface. Because of its fluid form, F/A Roofing offers ease of application for free-form roof decks—where conventional roofing materials are frequently unsuitable. After application, it presents a colorful protective membrane that forms a permanent bond with the roof surface.

* TRADE MARK OF E. I. DUPONT DE NEMOURS & CO., INC.

NEW ARMSTRONG F/A ROOFING IS:

Durable The elastomers (neoprene and Hypalon) employed in the F/A Roofing system are noted for their resistance to physical deterioration and weathering. That's why F/A Roofing can withstand prolonged exposure to the elements. Actual installations indicate that F/A Roofing will offer many years of satisfactory protection.

Flexible Due to its elastic nature, F/A Roofing has outstanding flexibility, allowing it to expand or contract with the surface beneath it. Hairline cracks in the decking material won't cause the protective film to tear. In addition to its flexibility, F/A Roofing is extremely light, with a weight of less than 20 pounds per hundred square feet.

F/A Roofing is resistant to all kinds of weather. Unlike thermoplastics and mastics, F/A Roofing doesn't become brittle in winter or will it soften, even in severely hot weather. There are no unstable components in F/A Roofing to be drawn out by sunlight and weather, so it cannot change properties. Moreover, F/A Roofing provides excellent protection against moisture because it cures to form a permanent, water-tight bond with the roof structure.

Versatile Since free-form construction often completely exposes the roof, modern roofing materials must meet aesthetic—as well as functional—requirements. Armstrong F/A Roofing is particularly well suited to buildings that frequently employ these imaginative designs—such as recreational, religious, commercial, and civic structures. It actually enhances the over-all design of the free-form structure by curing into an integral surface of the roof—providing a monolithic protective membrane. In addition, F/A Roofing is ideally suited for canopies, marquees, sunshades, and similar structural trim.

Colorful The Hypalon base of F/A 600 Roofing enables it to be manufactured with a variety of stable pigments. The bright shades and pastels available in F/A Roofing provide a high degree of flexibility for the architect in color-coordinating a building exterior. F/A Roofing maintains the reflective qualities of light colors and pastels indefinitely, thereby reducing a building's interior temperature and lightening the load on air-conditioning equipment.

Easily maintained With F/A Roofing, areas of local damage may be easily renewed. A simple repair procedure again results in a water-tight surface. In addition, no hot-melt equipment is required for its application. Where reinforced with special glass fiber tape, F/A Roofing is self-flashing. Gravel stops are not required, and metal edging and fascia can be eliminated.

Armstrong F/A ROOFING

ARMSTRONG F/A ROOFING

Research, Manufacture, and
Quality Control

Drawing on years of experience in rubber and plastics technology, Armstrong introduces F/A Roofing as the answer to your modern-day roofing problems. To assure superior performance, stringent laboratory and field test programs have preceded the introduction of this new roofing system.

F/A Roofing is manufactured in the Lancaster, Pa., plant of the Armstrong Cork Company by personnel skilled in the production of building adhesives and industrial specialties. To meet the high standards established for physical properties and performance characteristics, the most rigid quality control procedures are employed.



The photograph shows application of F/A Roofing to the Willow Grove Bowling Lanes entrance canopy. It's a simple two-man operation.

ARMSTRONG F/A ROOFING IS EASILY APPLIED

The deck is first primed with a cut-back solution of F/A 400. (Although the Willow Grove Bowling Lanes entrance canopy shown above has a deck of plywood, the process described remains the same with concrete decks.) Open joints are then sealed with Armstrong Deck Sealer. Once joints are sealed, Armstrong Flashing Tape is applied where necessary as a reinforcing membrane.

F/A 400 is then applied in two layers—each of a different color to insure full coverage. Application by hand or pressure-fed roller is recommended. Two applications of F/A 600 complete the installation and add the desired color.



Armstrong Flashing Tape—a companion product to F/A Roofing. Armstrong Flashing Tape is a glass fiber fabric designed for use as a flashing membrane and joint reinforcement.



Armstrong Deck Sealer—an elastic caulking compound to round out the F/A Roofing system. It is used to prepare depressions, cracks, voids, and joints in the roof deck for the application of F/A 400.

New Armstrong F/A Roofing

DESIGNED TO SOLVE MODERN ROOFING PROBLEMS

Thin shell concrete and plywood are giving America's skyline a striking new look of free-form beauty. But today's free-form roof decks with their irregular, elliptical, or undulating slopes call for roofing materials with both decorative and protective qualities. Armstrong F/A Roofing is designed especially to meet these requirements. It is a combination of two liquid roofing products applied to form a tough and flexible roofing membrane: F/A 400 Roofing, a neoprene base material, and F/A 600 Roofing, a Hypalon® base coating that forms the finished surface. Because of its fluid form, F/A Roofing offers ease of application for free-form roof decks—where conventional roofing materials are frequently unsuitable. After application, it presents a colorful protective membrane that forms a permanent bond with the roof surface.

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Armstrong F/A ROOFING

GENTLEMEN:

PLEASE SEND ME YOUR FREE LITERATURE ON ARMSTRONG F/A ROOFING.

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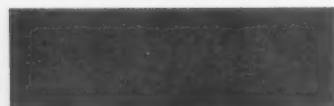
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F/A Roofing comes in a choice of six basic colors shown below. Non-standard colors can be provided on request. Send the attached card for complete information on Armstrong F/A Roofing.



610 - Gray

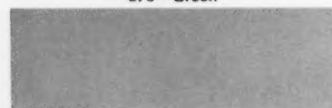


620 - Red

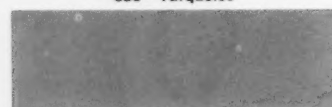
685 - Blue



670 - Green



680 - Turquoise



640 - Yellow

FILL OUT ATTACHED CARD
AND MAIL IT
TODAY.

FIRST CLASS
PERMIT R-17,
LANCASTER, PA.



BUSINESS REPLY MAIL

No postage stamp necessary if mailed in the United States

Postage will be paid by

ARMSTRONG CORK COMPANY
4611 RYMAN STREET
LANCASTER, PA.

New Armstrong F/A Roofing

DESIGNED TO SOLVE MODERN ROOFING PROBLEMS

Thin shell concrete and plywood are giving America's skyline a striking new look of free-form beauty. But today's free-form roof decks with their irregular, elliptical, or undulating slopes call for roofing materials with both decorative and protective qualities. Armstrong F/A Roofing is designed especially to meet these requirements. It is a combination of two liquid roofing products applied to form a tough and flexible roofing membrane: F/A 400 Roofing, a neoprene base material, and F/A 600 Roofing, a Hypalon® base coating that forms the finished surface. Because of its fluid form, F/A Roofing offers ease of application for free-form roof decks—where conventional roofing materials are frequently unsuitable. After application, it presents a colorful protective membrane that forms a permanent bond with the roof surface.

* TRADE MARK OF E. I. DUPONT DE NEMOURS & CO., INC.

NEW ARMSTRONG F/A ROOFING IS:

Durable The elastomers (neoprene and Hypalon) employed in the F/A Roofing system are noted for their resistance to physical deterioration and weathering. That's why F/A Roofing can withstand prolonged exposure to the elements. Actual installations indicate that F/A Roofing will offer many years of satisfactory protection.

Flexible Due to its elastic nature, F/A Roofing has outstanding flexibility, allowing it to expand or contract with the surface beneath it. Hairline cracks in the decking material won't cause the protective film to tear. In addition to its flexibility, F/A Roofing is extremely light, with a weight of less than 20 pounds per hundred square feet.

F/A Roofing is resistant to all kinds of weather. Unlike thermoplastics and mastics, F/A Roofing doesn't become brittle in winter or will it soften, even in severely hot weather. There are no unstable components in F/A Roofing to be drawn out by sunlight and weather, so it cannot change properties. Moreover, F/A Roofing provides excellent protection against moisture because it cures to form a permanent, water-tight bond with the roof structure.

Versatile Since free-form construction often completely exposes the roof, modern roofing materials must meet aesthetic—as well as functional—requirements. Armstrong F/A Roofing is particularly well suited to buildings that frequently employ these imaginative designs—such as recreational, religious, commercial, and civic structures. It actually enhances the over-all design of the free-form structure by curing into an integral surface of the roof—providing a monolithic protective membrane. In addition, F/A Roofing is ideally suited for canopies, marquees, sunshades, and similar structural trim.

Colorful The Hypalon base of F/A 600 Roofing enables it to be manufactured with a variety of stable pigments. The bright shades and pastels available in F/A Roofing provide a high degree of flexibility for the architect in color-coordinating a building exterior. F/A Roofing maintains the reflective qualities of light colors and pastels indefinitely, thereby reducing a building's interior temperature and lightening the load on air-conditioning equipment.

Easily maintained With F/A Roofing, areas of local damage may be easily renewed. A simple repair procedure again results in a water-tight surface. In addition, no hot-melt equipment is required for its application. Where reinforced with special glass fiber tape, F/A Roofing is self-flashing. Gravel stops are not required, and metal edging and fascia can be eliminated.

Armstrong F/A ROOFING

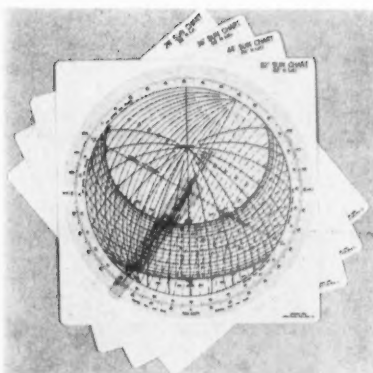
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PRODUCTS, EQUIPMENT, MATERIALS

Report of recent developments by industry, based on data furnished by manufacturers. Inquiry cards for further information face pages 1 and 66.



SUN ANGLE CALCULATOR EASES DESIGN DECISIONS

MFR'S DESCRIPTION: calculator for quickly determining the true altitude, profile angle, bearing and angle of incidence of the sun for building designs anywhere from Key West, north through Newfoundland.

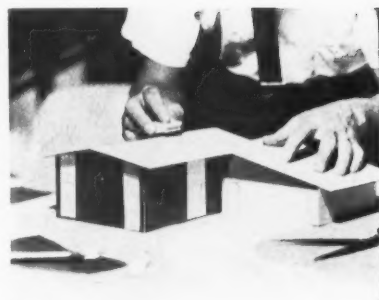
USES: application of the sun's angular values to the design of structures.

SPECS/FEATURES: device is applicable to all latitudes embraced by the United States and gives all necessary values for all possible conditions of time and orientation in terms which can be directly applied to the drafting board. Kit also contains two charts: 1 is for determining sky (diffuse) energy incident upon a vertical surface in BTU's per sq.ft./hr. and 2 for determining direct solar energy incident upon a vertical surface in BTU's per sq.ft./hr. A 31 page instruction booklet with detailed text, charts and graphs is included.

AIA FILE NO. N/A

MFR: LIBBEY-OWENS-FORD GLASS CO.

Circle 200 for further information



SCALE MODEL CONSTRUCTION KIT

MFR'S DESCRIPTION: kit for use in construction of a scale model of residential or commercial structure.

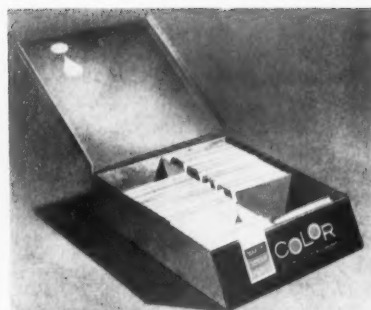
USES: scaling and detailing

SPECS/FEATURES: kit is at 1/4" to the foot and contains realistic exterior finishes of brick, ledge rock, horizontal and clapboard siding, vertical siding, cement block, roofing and terrazzo and sidewalk material. Kit also contains window and door aids, material calculator and other products. Kit is available with red, brown or gray brick finishes.

AIA FILE NO. 41

MFR: MA-DEL COMPANY

Circle 201 for further information



PAINT COLOR FILE HOLDS 1500 SWATCHES

MFR'S DESCRIPTION: a handsome case with clear plastic lid houses 3"x5" color chips for selection of manufacturer's interior and exterior paints.

USES: specifying paint colors

SPECS/FEATURES: the collection of 1500 colors is indexed for easy reference. Available paint finishes are listed on the back of each color chip. Each color is coded on punch cards for precise formulation by the manufacturer. Included in the collection are 240 new colors recently introduced by the manufacturer.

AIA FILE NO. 25-B-2

MFR: MARTIN-SENOUR CO.

Circle 202 for further information



COLONIAL BRICK FROM WILLIAMSBURG

MFR'S DESCRIPTION: handmade brick utilizing the production techniques of the early 18th century.

USES: residential and commercial

SPECS/FEATURES: production techniques produce brick in a full range of color from pink to orange-red and from buff to glazed headers. In order to produce each of the handmade brick with uniform structural properties, each brick is hard-burned and sometimes re-burned. No two bricks are exactly alike. Handmade colonial bricks are slightly larger than commercial products. They are approximately 9"x4 1/2"x2 5/8".

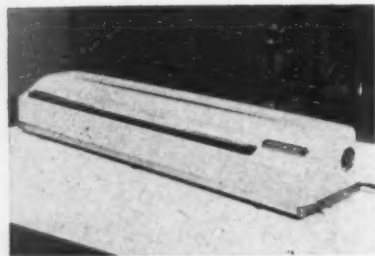
AIA FILE NO. 3-F

MFR: COLONIAL BRICK OF WILLIAMSBURG, INC.

Circle 203 for further information

PRODUCTS, EQUIPMENT, MATERIALS

OFFICE AIDS



TRANSFER-TYPE PROCESSOR FOR ARCHITECT'S DRAWINGS

MFR'S DESCRIPTION: a new silver transfer process for contact exposure in whiteprint machines combines photocopy versatility with handling convenience of diazo.

USES: reproduction of drawings and sketches

SPECS/FEATURES: new process is said to copy anything that can be exposed in a whiteprinter and also provides color sensitivity of silver photographic emulsion. This includes blueprints, blueprint diazo prints, black and white diazo prints, spirit aniline copies, red pencil, and blue ball point pens. It can also be used with flat-bed printers, using arc lamps for exposure. Processor accommodates all sizes of sheets from 8"x10" up to 24"x36".

AIA FILE NO. 35-H-3

MFR: CHARLES BRUNING CO., INC.

Circle 204 for further information

DIAZO PRINT DEVELOPER FOR WALL MOUNTING

MFR'S DESCRIPTION: a completely new diazo print developer.

USES: reproduction of drawings and sketches

SPECS/FEATURES: developer features a heated roller which speeds up the action of chemicals and helps assure good color tone on black line prints as well as blue line and sepia. Unit weighs 30 lbs., and is designed for wall mounting, but may be used on desk if desired. Estimated costs for copies are 1½¢ per sq. ft. Size of print ranges from 18" to 42" wide, by any length.

AIA FILE NO. 35-H-3

MFR: ROTOLITE SALES CORP.

Circle 205 for further information

LEAD HOLDERS WITH NEW STYLING

MFR'S DESCRIPTION: two new plastic and aluminum lead holders designed for long use with comfort.

USES: drafting rooms

SPECS/FEATURES: lead holders accommodate standard 5¼" drafting leads. Both are dark green plastic at the bottom with the top a natural

aluminum finish and are designed for perfect balance and light weight. One model features a triangular tapered plastic finger grip.

AIA FILE NO. 35-H-3

MFR: A. W. FABER-CASTELL PENCIL CO., INC.

Circle 206 for further information

COLOR PENCILS NOW ERASABLE

MFR'S DESCRIPTION: development of a new lead formula which provides erasability in a series of thin lead color pencils.

USES: drafting rooms

SPECS/FEATURES: erasable pencils said to retain all the qualities of non-erasables. New eraser, in a metal ferrule, will not smudge while cleaning. The new erasable pencils are available in red, blue, yellow and green.

AIA FILE NO. 35-H-3

MFR: EBERHARD FABER PEN & PENCIL CO.

Circle 207 for further information

DRY DIAZO WHITEPRINTER IN NEW TABLE MODEL

MFR'S DESCRIPTION: table model dry diazo whiteprinter operates at speeds up to 55 linear feet per minute.

USES: reproductions of plans and sketches

SPECS/FEATURES: machine capable of handling reproductions up to 20" wide by any length. Overall dimensions are 28½" high and 40" wide. With the feeding leaf, the depth is 41¼". Exposure lamp is a 60-watt/inch mercury arc lamp. Developer section features a full-strength ammonia developer system automatically fed by a solenoid pump. Machine operates on either 110 or 220 volts.

AIA FILE NO. 35-H-3

MFR: PARAGON-REVOLUTE DIV., CHARLES BRUNING CO., INC.

Circle 208 for further information

TWO-IN-ONE COPIER FOR OFFICE USE

MFR'S DESCRIPTION: copier that combines a diazo process and a photocopy unit that copies anything, including colored images and one- or two-sided documents.

USES: copying for drafting rooms and offices

SPECS/FEATURES: bottom section contains a dual-purpose exposure unit—convertible to either diazo or photocopy, and a complete diazo process unit with top speed of 12' per minute. Upper section contains a photocopy processing unit, also geared at 12' per minute. All 3 units are con-

trolled by a single, graduated knob. Machine processes up to 11" wide paper. Machine is 14¼" high, 19¾" wide and 14¾" deep. It weighs 61 lbs. Operates on 115 v, 60-cycle, single phase, AC.

AIA FILE NO. 35-H-3

MFR: CHARLES BRUNING CO., INC.

Circle 209 for further information

TWO-LINE INTERCOM FOR HEAVY TELEPHONE USE

MFR'S DESCRIPTION: a new intercom telephone where heavy telephone use is concentrated.

USES: inter-office communications

SPECS/FEATURES: fully compatible with, and accessible to and from, all other instruments on a private automatic exchange, telephone allows use of another extension from the same station plus an automatic "hold" feature. To permit ready identification, one line signals with a bell, the other by buzzer. Telephone also features a priority button for cut-in privilege.

AIA FILE NO. 31-i-51

MFR: TELE-NORM CORPORATION

Circle 210 for further information



LAYOUT TEMPLATES IN METRIC MEASUREMENTS

MFR'S DESCRIPTION: a line of layout templates using the metric system.

USES: interior layouts

SPECS/FEATURES: where metric measure is required, new products allow architects and engineers to plot layouts without having to convert feet and inches to metric measure. Made of polyester plastic, equipment is custom-made for each individual plan, including printing in languages other than English, if required. Completed layouts can be run through any blueprint machine to obtain installation prints. Items offered include precise grids, floor plan panels showing every structural feature of the building, and color-coded templates of all equipment, facilities,

and furnishings to be used. Manufacturer also produces standard American measurement layout equipment.

AIA FILE NO. 41

MFR: PLANPRINT CO.

Circle 211 for further information

DRAFTING TABLE WITH TOE-CONTROL

MFR'S DESCRIPTION: a series of drafting tables with "toe-touch" controls.

USES: drafting rooms

SPECS/FEATURES: "toe-touch" pedals provide remote control for heights of 30" to 45" and angles from 50° to 90° from a seated position. Surface is said to be nonglare, washable and self-sealing. Other features are an adjustable floor levelling leg system, aluminum pencil trough, a built-in bookcase and zinc plated steel end cleats.

AIA FILE NO. 35-H-3

MFR: STACOR EQUIPMENT CO.

Circle 212 for further information

PARALLEL STRAIGHTEDGE FOR DRAFTING USES

MFR'S DESCRIPTION: a new parallel straightedge, featuring a locking device that prevents up-and-down drift and accidental misplacement.

USES: drafting

SPECS/FEATURES: straightedge permits drawing of lines across the width of drafting board quickly and parallel. Straightedge is said to maintain perfect accuracy even when making angular adjustments to base-lines slightly off the horizontal. Another advantage is said to be a transparent beveled lucite ruling edge. Unit is available in 36", 42", 48", 54", 60", 72", 84" and 96" lengths.

AIA FILE NO. 35-H-3

MFR: KEUFFEL & ESSER CO.

Circle 213 for further information

DRAWING PENCILS/LEADS WITH NEW QUALITIES

MFR'S DESCRIPTION: restyled drawing pencils (designed by Raymond Loewy) combined with improved leads.

USES: drafting rooms

SPECS/FEATURES: graphite 99.7% pure and clay pre-ground for 24 hours are said to combine to create a new lead of substantially greater point strength, smoothness, durability, blackness and opacity. Drawing pencils, completely restyled, feature a twelve-sided aluminum cap and are packed by the dozen in blue styrene sleeves with a slide of semi-flexible white polyethylene.

AIA FILE NO. 35-H-3

MFR: EAGLE PENCIL CO., INC.

Circle 214 for further information

COMPASS/BEAM ATTACHMENT FOR DRAWING POINTS

MFR'S DESCRIPTION: a new compass and compass beam attachment, designed for use with interchangeable

PRODUCTS, EQUIPMENT, MATERIALS

drawing point sections.

USES: drafting rooms

SPECS/FEATURES: a precision-engineered ringhead bow compass with a special quick-setting device, can be used with either drawing point sections or with graphite leads. The beam attachment for making large circles assures uninterrupted completion of large circle with an ample ink supply in the drawing point section.

AIA FILE NO. 35-H-3

MFR: KOH-I-NOOR, INC.

Circle 215 for further information

FLOORS/CEILINGS

NEW ACOUSTICAL CEILING SYSTEM

MFR'S DESCRIPTION: ceiling system comprises four basic components centering on a new locking device at all intersections of the framework.

USES: acoustical ceiling systems

SPECS/FEATURES: main tee, cross tee, perimeter moulding, and beam splicer, are said to lock rigidly, stay square and are quickly disengaged for maintenance of pipes and fixtures concealed above the ceiling. Printing method on painted metal strip sections helps conceal quarterings, aiding in a uniform ceiling appearance. System snap-locks in place.

AIA FILE NO. 17-A

MFR: FLANGEKLAMP CORP.

Circle 216 for further information

NEW QUARRY TILES IN TEXTURED DESIGNS

MFR'S DESCRIPTION: two new patterns in a series of textured quarry tile.

USES: tiling

SPECS/FEATURES: *Seville* is a large formal pattern formed with four quarry tiles. Design was adapted from a classic form found in the Middle East and is suitable for areas requiring formality and symmetry. *Medallion* is an informal, loose-line design, also formed with four quarry tiles. This design may be used to complement all types of architecture and decor. Both designs available in 6"x6"x1 1/2" tiles and matching trim units. Glazed, indented, designs are available in 12 standard glaze colors and 5 earth-shade tile colors.

AIA FILE NO. 23-G

MFR: SUMMITVILLE TILES, INC.

Circle 217 for further information

CEILING SYSTEM WITH ADDED FEATURES

MFR'S DESCRIPTION: a series of new exposed grid suspension systems.

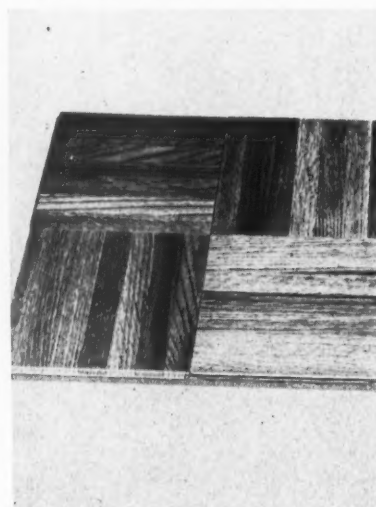
USES: suspending ceilings

SPECS/FEATURES: a pivoting cam-lock and lip snaps in place by hand, providing level attachment. The clip makes a single cross tee adaptable to both ashlar and rectangular patterns without using extra parts. A new bridging tee requires no clips, bending or crimping, its new end tab design providing a secure fit automatically, according to manufacturer. A 1 1/4" bulb-shaped web on the bridging tee, as well as the cross tee, is said to increase load-carrying capacity up to 90%. In addition, 2" o. c. pre-routing eliminates measurement.

AIA FILE NO. 17-A

MFR: EASTERN PRODUCTS CORP.

Circle 218 for further information



PARQUET FLOOR PANELS WITH FLEXIBLE UNDERLAY

MFR'S DESCRIPTION: hardwood parquet floor panels with resilient "homasote" base and simplified installation.

USES: flooring

SPECS/FEATURES: flooring is a combination of 3/4" hardwood tiles and a 3/8" resilient base. Tiles are 6"x6" and are "ready-laid," in parquet design, by direct lamination to the resilient panels which are furnished in either 2'x1' or 1'x1' sizes. Manufacturer claims this system of flooring provides a resilient walking surface, insulation from heat, cold or dampness and sound-deadening advantages. Flooring may be laid over slabs above grade, sub-floor and floors already installed. Available in premium grade white and red oak, hard maple, Colonial ash or black walnut. Surface is prefinished with four coats of varnish baked on, then waxed and buffed. Tiles are tongue-and-grooved.

AIA FILE NO. 23-J

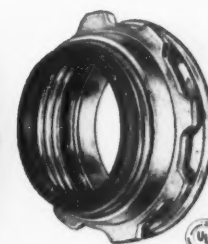
MFR: HOMASOTE CO.

Circle 219 for further information

TOMIC DOES IT AGAIN—with a revolutionary new All-Purpose Thinwall Fitting that packs every famous TOMIC Tap-On feature into a single fitting that meets all your thinwall requirements!

NEW

**INSULATED, BUSHED
EMT RAIN-TIGHT
TAP-ON FITTING**



Patents: 2458276, 2986060

- **IT'S RAIN-TIGHT** OK for outdoors or in-concrete slabs!
- **IT'S BUSHED** No inside ridges to snag fishtape or fray wire!
- **IT'S INSULATED** For extra protection against shorts!
- **IT'S ECONOMICAL** Priced right—Finest Quality!

FAST, EASY INSTALLATION . . . WITHOUT TOOLS!

Just tap or push it on . . . and Tomic's new Insulated, Bushed EMT Rain-Tight Fitting becomes an integral part of the thin-wall . . . automatically puts standard pipe thread on EMT conduits! Patented pre-flex steel locking ring grips conduit securely at multiple points for positive grounds that won't shake, jar or work loose!

TOMIC RAIN-TIGHT TAP-ON COUPLINGS are ideal for long runs, saddles, bends, corners, etc . . . permit easy changes from EMT to rigid, flex—any cable—without special adapters.

Sizes Available: No. 20: 1/2" connector; No. 21: 3/4" connector; No. 320: 1/2" coupling; No. 321: 3/4" coupling. Write today for prices, samples and complete information.



tomic

TODAY'S FINEST ELECTRICAL FITTINGS
PRICED TO SAVE YOU MONEY.

TOMIC SALES & ENGINEERING CO.

20,000 SHERWOOD AVE., DETROIT 34, MICH.

Circle 112 for further information

PRODUCTS, EQUIPMENT, MATERIALS

MODULAR GRID CEILING SYSTEM

MFR'S DESCRIPTION: greater latitude in ceiling design provided by a new exposed grid, modular suspension ceiling system.

USES: ceilings

SPECS/FEATURES: grid incorporates two principal features: 1 choice of six flange widths every $\frac{1}{2}$ " from $1\frac{1}{2}$ " to 4" and 2 cross-tee attachment at any point along the web of main runner. Different flange widths can be combined within the same module, and partition and mullion design can, where desired, be carried into the ceiling area without interruption.

AIA FILE NO. 17-A

MFR: EASTERN PRODUCTS CORP.

Circle 220 for further information

DOORS



DOUBLE DOOR LOCK INCREASES SAFETY

MFR'S DESCRIPTION: double locking device to fit on all conventional types of mortise or rim cylinders.

USES: security

SPECS / FEATURES: "piggy - back" double locking system consists of an adapter that fits all standard diameter and threaded cylinders and a key lock that snaps on the basic mortise or rim cylinder lock for double protection. Lock has a 5-tumbler cylinder, and is small enough to carry in a pocket. Various models and finishes are available.

AIA FILE NO. 27-B

MFR: PRECISION LOCK MFG. CO., INC.

Circle 221 for further information

Circle 113 for further information →

HIGHLY IMPROVED
**SOUND
BARRIER**



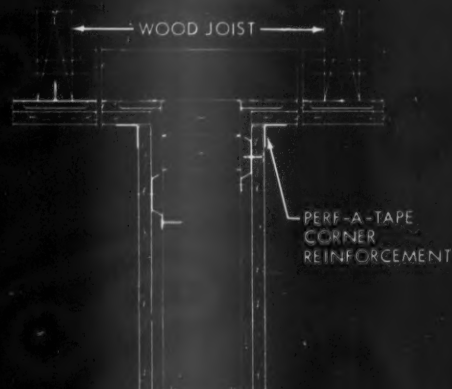
Sturdy 25-gauge steel resilient channel screws or nails directly to wood framing. SHEETROCK Wallboard quickly attaches with 1" or $1\frac{1}{4}$ " USG Drywall Screw-Type "S."

with... **LOW-COST
GYPSUM DRYWALL**
**NEW RC-1 SHEETROCK* RESILIENT
ATTACHMENT SYSTEM!**

FOR THE FIRST TIME—a practical answer to noise problems with gypsum drywall on wood framing! Designed for partitions and ceilings in garden-type apartments, motels, multi-family units. Besides controlling unwanted sound transmission, the RC-1 SHEETROCK ATTACHMENT SYSTEM erects quickly, easily, without clips and furring strips. And, it's 1-hour fire-rated! Other outstanding advantages:

- 43 db average sound transmission loss with a single layer of $\frac{1}{2}$ " SHEETROCK Wallboard each side.
- 46 db average sound transmission loss with additional layer of $\frac{1}{2}$ " SHEETROCK laminated on one side only.
- 48 db average sound transmission loss (air borne) for floors and ceilings.
- Low material costs; only one component for both side-walls and ceilings.
- Fast, labor-saving erection; clean gypsum drywall construction.
- Job-proved. Over a quarter-million lineal feet now in use.

See your United States Gypsum sales or architect service representative, or mail the coupon. In Canada, contact Canadian Gypsum Company, Ltd., Toronto, Montreal.



For ceiling application, screw attachment firmly anchors wallboard; screws won't damage SHEETROCK core; finished job is smoother.

**UNITED
STATES
GYPSUM**

the greatest name in building

*T.M. Reg. U.S. Pat. Off.



United States Gypsum, Dept. AEN-13
300 W. Adams St., Chicago 6, Ill.

Please send more information about the new RC-1 SHEETROCK Resilient Attachment System.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

**PRODUCTS,
EQUIPMENT,
MATERIALS**



**HONEYCOMB STEEL DOORS
COMPLETELY SEAMLESS**

MFR'S DESCRIPTION: a series of standardized full flush hollow metal steel doors and frames.

USES: entrances and exits

SPECS/FEATURES: manufacture of door is such as to produce a completely seamless exterior. All doors in this series have a full honeycomb core to help eliminate metallic sound. Honeycomb core is also said to provide good rigidity and strength.

AIA FILE NO. 16-A

MFR: KEWANEE MANUFACTURING CO.

Circle 222 for further information

**HOLLOW STEEL DOOR HAS
PAPER HONEYCOMB CORE**

MFR'S DESCRIPTION: standard doors with steel panels reinforced with kraft paper honeycomb cores.

USES: residential, commercial and industrial

SPECS/FEATURES: manufacturer states paper honeycomb core in steel hollow door eliminates echoes, and provides good resistance to twisting and deflection. Available in standard door sizes.

AIA FILE NO. 16-A

MFR: STEELCRAFT MANUFACTURING CO.

Circle 223 for further information

HVAC

**GAS AIR CONDITIONING
IN FIFTEEN-TON UNIT**

MFR'S DESCRIPTION: unit for medium-sized structure with savings claimed at 30% to 50%.

USES: commercial air conditioning

SPECS/FEATURES: absorption unit receives its energy directly from a gas-fired burner. It produces chilled water for air conditioning and industrial cooling applications. Plain water is the refrigerant and lithium

← Circle 113 for further information

PRODUCTS, EQUIPMENT, MATERIALS

bromide is the absorbant. Operation is automatic. One motor-driven pump circulates the refrigerant and absorption solution in the sealed system. Unit is factory assembled, and includes electrical controls.

AIA FILE NO. 30-F-2

MFR: STATHAM-SWEARINGEN, INC.

Circle 224 for further information

RADIANT HEATING/COOLING UNDER TERRAZZO FLOORING

MFR'S DESCRIPTION: special terrazzo flooring for use over radiant heating or cooling systems.

USES: interior-exterior HVAC in terrazzo flooring

SPECS/FEATURES: new indoor and outdoor installation method devised especially for application over radiant heating or cooling system most generally combined with concrete-type floors.

AIA FILE NO. 30-A

ASSN: NATIONAL TERRAZZO & MOSAIC ASSN.

Circle 225 for further information

LOW-RISE HVAC UNIT FOR GLASS WALLS

MFR'S DESCRIPTION: units for air conditioning, heating and ventilating 14½" high and 12½" deep.

USES: HVAC in glass wall construction

SPECS/FEATURES: unit is available in a flush wall model or a free standing model which permits drapes to be hung behind the item. Four sizes from 200 cfm to 600 cfm are available, with seven colors. They have a permanent split capacitor motor, slide out fan deck assembly, motor disconnect plug, large access doors and piping compartments, 1" vinyl coated insulation and air filter removal without front panel removal.

AIA FILE NO. 30

MFR: MCQUAY, INC.

Circle 226 for further information

LIGHTING

SQUARE FLUORESCENT FIXTURE WITH RECESSED HOUSING

MFR'S DESCRIPTION: fluorescent fixture with all metal housing finished in white enamel.

USES: lighting

SPECS/FEATURES: a light stabilized diffusers rest on a bed of gold anodized louvers. Extra-shallow panel of light, supported by a recessed housing, give the appearance of floating just below the ceiling line. Available in a variety of sizes, it may be used individually in continuous rows, or

APPLICATION IDEAS WITH JANITROL HEATING AND AIR CONDITIONING

How to obtain comfort at a comfortable cost

in commercial, industrial and institutional buildings



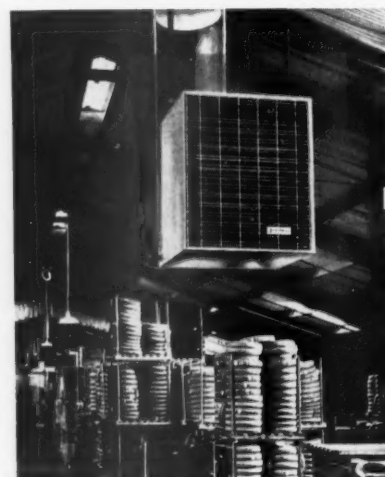
Mayfair Shopping Center, STOCKTON, CALIFORNIA

Designer-Engineer: Klar
Wennerholm, Stockton. General
Contractor: Nomellini Construction
Company, Stockton. Heating and
Air Conditioning Contractor:
Pacific Plumbing and Heating
Company, Stockton.
Developer: Art Basso.

Suspended Janitrol 67-Series gas unit heaters and blower coil cooling packages are used throughout the 17-store Mayfair Center. The advantages are many. No ductwork required. Big savings in labor and material costs. Valuable floor space saved for selling. The compact, smartly-styled Janitrol units blend harmoniously with the interiors. Janitrol 52-Series air-cooled condensing units are remotely located on the roof.

White Stores, Inc., WICHITA FALLS, TEXAS

... has 19 Janitrol 67-Series unit heaters in this new 106,000 sq. ft. warehouse, located in Farmers Branch (Dallas) Texas. The heaters are suspended over the aisles at 100 foot intervals, and each unit has 250,000 Btu./hr. capacity. White's have used Janitrol for many years in their retail stores, based on Janitrol's attractive appearance and record for performance and economy.



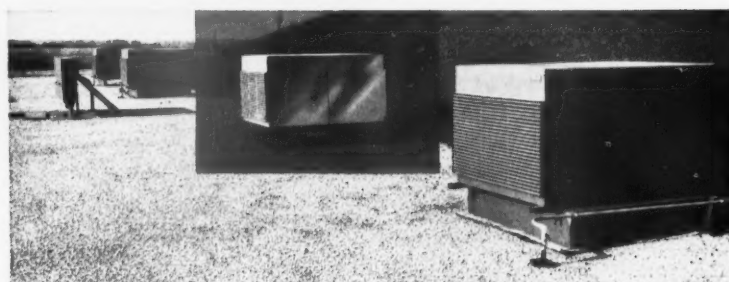
Circle 114 for further information



**Hanscom Candy & Pastry Shop
Wynnewood Shopping
Center**

WYNNEWOOD, PA.

The false acoustical ceiling serves as a plenum, and special, slotted supporting channels serve as strip diffusers in this unusual Janitrol application. The conditioned air, under slight pressure is distributed quietly and evenly. This low-cost system required only one supply and one return duct connection, in combination with a Janitrol duct furnace, blower coil and condensing unit.

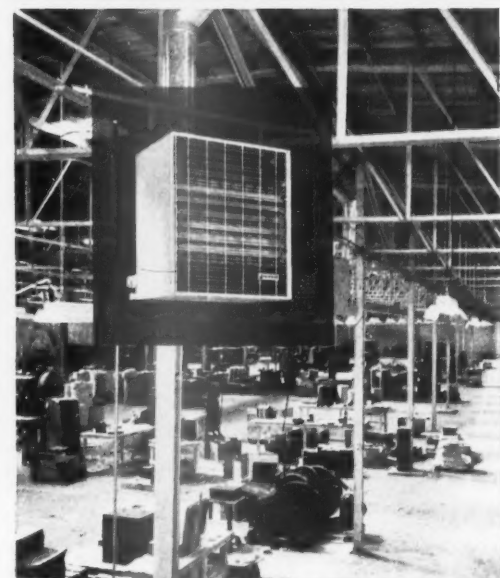
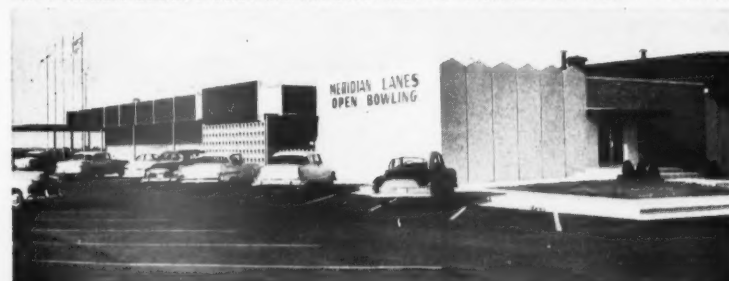


**Meridian Lanes
Bowling Center**

OKLAHOMA CITY

Architects and Engineers:
Bramble and Baldwin,
Oklahoma City. General
Contractor: Everett Construction,
Oklahoma City. Heating and Air
Conditioning Contractor:
Barlow and Matherly,
Oklahoma City.

Seven-zone comfort control was economically achieved at the Meridian Lanes Bowling Center with seven, individual Janitrol year 'round systems. The Janitrol 52-Series air-cooled condensing units are mounted on the roof. They operate without water, need no sewerage service, and provide cooling with outside temperatures up to 125°F. All other equipment for this heating-cooling system (except two small furnaces) is installed either on the roof or in the attic space. 100% fresh air in any of the public areas is assured by this system—plus stand-by capacity, in the event any single unit is being serviced.



**Detroit Gasket &
Manufacturing Company** NEWPORT, TENN.

This modern manufacturing facility was converted from a tobacco warehouse. The original building was unheated, so eight Janitrol 67-Series gas unit heaters were installed in the plant area, and a Janitrol year 'round system conditions the office. Mr. T. H. Ellis, Manager, reports that the Janitrol units were easy to put in, give excellent wide-area comfort and seldom need maintenance attention. Heating and Air Conditioning contractor: Brannon Electric Company, Newport, Tennessee.

For more information on
Janitrol products, see our
catalog in Sweet's File
31b/Ja, contact your local
Janitrol office or write
headquarters in Columbus.

JANITROL® A DIVISION OF
MFR
HEATING AND AIR CONDITIONING
COLUMBUS 16, OHIO
IN CANADA: MOFFATS LTD., TORONTO 15

Circle 114 for further information

**PRODUCTS,
EQUIPMENT,
MATERIALS**

in patterns. Diffuser spreads low brightness over a wide area. Shielding assemblies swing down from either side without tools for cleaning and relamping.

AIA FILE NO. 31-F-23

MFR: LIGHTOLIER

Circle 227 for further information

**ELECTROLUMINESCENCE
IN OUTDOOR LIGHTING**

MFR'S DESCRIPTION: a new series safety lighting devices utilizing electroluminescence.

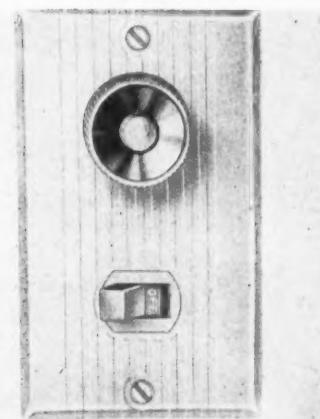
USES: indoor and outdoor safety lighting

SPECS/FEATURES: new series feature flat panels of glass or metal with an electrical conductive film coated with a special phosphor. Weatherproofed lighting unit, which can be built into stone or brickwork, utilizes an aluminum die-cast box 4½" x 2¾" x 1⅛" deep.

AIA FILE NO. 31-F-22

MFR: SOLAR SONIC DEVICES, INC.

Circle 228 for further information



**FLUORESCENT/INCANDESCENT
DIMMING CONTROL SYSTEMS**

MFR'S DESCRIPTION: a silicon electronic fluorescent dimming system and a compact silicon electronic incandescent dimmer control.

USES: illumination brightness control

SPECS/FEATURES: the silicon controlled rectifier incandescent dimmer control—both 500 and 800 watts—is compact enough to fit inside a standard light switchbox. A "quiet" toggle switch allows the current to be turned off or on with the dimmer dial in any position. The fluorescent dimming system consists of a wall control that is also mounted in a standard switchbox and has a separate on-off switch. System contains a master dimming strip fixture

PRODUCTS, EQUIPMENT, MATERIALS

which can actuate a complete circuit of one to eight auxiliary dimming strips.

AIA FILE NO. 31-D

MFR: THOMAS INDUSTRIES, INC.

Circle 229 for further information



RECESSED FIXTURES ROTATE FULL 360°

MFR'S DESCRIPTION: recessed lighting fixture that rotates in a complete 360° circle.

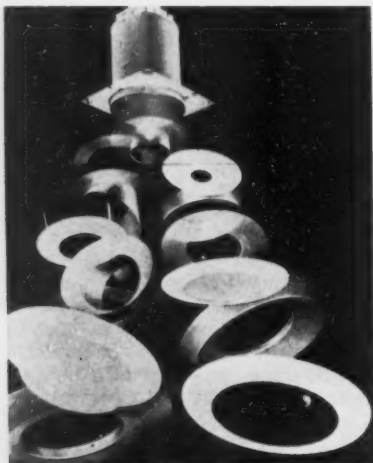
USES: commercial and residential illumination

SPECS/FEATURES: outer frames of fixture remains stationary, and lamp reflectors rotate within the inner frame to produce lighting effects. Light from 150-watt general service lamp is emitted through a 1"x4" aperture. Fixture is 8" wide and 9½" high overall, with eggshell frame finish.

AIA FILE NO. 31-F-23

MFR: HALO LIGHTING PRODUCTS, INC.

Circle 230 for further information



RECESSED FIXTURE VARIES HOUSINGS, FRONTS

MFR'S DESCRIPTION: new expanded series of recessed lighting fixtures that accommodate a wide variety of fronts and designed for a large number of uses.

USES: residential and commercial il-

lumination

SPECS/FEATURES: new series of recessed lighting fixtures comprises 13 housings and 36 different fronts including flat and drop bowl lenses, louvered, conical, skirted, eye-ball, pinhole, and adjustable spot. Fronts are made of anodized aluminum, or are available in chrome, brass, copper and painted.

AIA FILE NO. 31-F-23

MFR: EMERSON ELECTRIC CO.

Circle 231 for further information

FURNISHINGS

COMPACT KITCHENS WITH FLEXIBLE UNITS

MFR'S DESCRIPTION: a standard compact kitchen with a varied equipment selection.

USES: residential and commercial
SPECS/FEATURES: standard models incorporate 4, 6, and 8 cu. ft. refrigerators with a choice of two and four burner cooking tops. Units 48", 60" and 72" wide are also offered with oven and broiler sections if desired, or with optional storage cabinets. Sink tops are available in a choice of porcelain or stainless steel. All units are available with either gas or electric cooking elements. Finishes are white or a choice of appliance colors. Additional accessories are also available.

AIA FILE NO. 35-C-1

MFR: SPACEMASTER, INC.

Circle 232 for further information

ACOUSTIC/WALL MOUNTED TELEPHONE BOOTH

MFR'S DESCRIPTION: new designed acoustic telephone booth that can be installed by one man.

USES: commercial and industrial
SPECS/FEATURES: installation can be made on any type of wall construction. A wall bracket comes pre-punched for any studding. Bracket is mounted on wall, and booth placed on this bracket. Colors available are blue, green and coral, with ivory-color interiors and brushed aluminum trim.

AIA FILE NO. 39-C

MFR: ACOUSTICS DEVELOPMENT CORPORATION.

Circle 233 for further information

STANDARDIZED CABINETS IN 3-INCH MODULES

MFR'S DESCRIPTION: wood cabinets designed for standard increments of graduated 3" modules.

USES: residential and commercial kitchens.

SPECS/FEATURES: doors of the cabinet are of a high-pressure laminate.

Doors will not warp or dent, according to manufacturer and are said to be highly resistant to scratching or abrasions. Cabinets are available in various wood grain patterns, perfectly matched. Cabinet body is of Ponderosa pine and given a prime coat of paint at the factory. Units are designed in graduated 3" modules which can be combined to fit into various standard or custom installations.

AIA FILE NO. 35-C-12

MFR: CARADCO, INC.

Circle 234 for further information

CABINET DESIGNED FOR BUILT-IN OVENS

MFR'S DESCRIPTION: innovation in oven cabinet design that helps simplify built-in installations and offers a wide variety of door and drawer combinations.

USES: residential kitchens

SPECS/FEATURES: mullions of cabinets are pre-punched to receive cross-rails, doors or drawers of different heights, permitting many variations of storage arrangements below the oven. A supporting shelf for the oven unit is adjustable up and down on 1" increments. Cabinets are available in any of six colors.

AIA FILE NO. 35-C-12

MFR: GENEVA MODERN KITCHENS

Circle 235 for further information



CONTRACT OFFICE LINE OF COMMERCIAL FURNITURE

MFR'S DESCRIPTION: a series of desks, modular work stations and credenza units for all management levels.

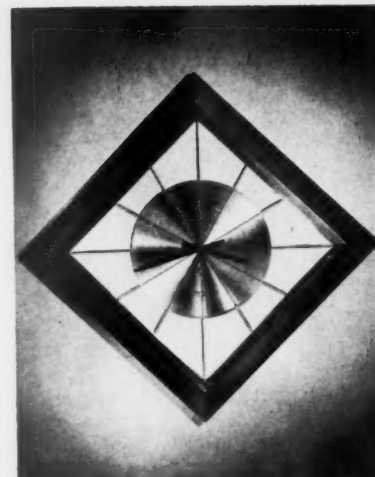
USES: office furnishings

SPECS/FEATURES: unit's tops are 20", 30" and 36" deep and come in a variety of standard widths. Standard tops are reinforced steel with laminated plastic cover and steel binding. Also available are self-edged laminated plastic tops and wood tops in walnut, cherry, teak, rosewood and butternut veneers.

AIA FILE NO. 28-A

MFR: YAWMAN & ERBE MANUFACTURING CO., INC.

Circle 236 for further information



COMMERCIAL WALL CLOCKS IN NEW DESIGN MOTIFS

MFR'S DESCRIPTION: wall clocks in two models, an 8-day keywound, and a cordless electric (battery-operated).

USES: commercial interiors

SPECS/FEATURES: dials of both models are square in shape and clocks are designed to hang from one corner. Acrylic plastic is used for clock dials.

AIA FILE NO. 35-N-4

MFR: WESTCLOX DIV., GENERAL TIME CORP.

Circle 237 for further information

SPEAKER BAFFLE ENCLOSURES IN TWO NEW DESIGN SERIES

MFR'S DESCRIPTION: one series of a speaker baffle with a specially designed frame, and a series of a single unit baffles for flush wall installation.

USES: residential and commercial
SPECS/FEATURES: both series of baffles incorporate a low frequency port design. Designed for 8" speakers, they will accept 6" or 7" speakers without modification. Both series are available in a wide choice of colors. Plaster rings facilitate installation. Also available are enclosures for installations requiring an enclosed speaker.

AIA FILE NO. 31-i-7

MFR: WALD, INC.

Circle 238 for further information

PANELS/PARTITIONS/SCREENS

MOVABLE PARTITION SYSTEM WITH CUSTOM FEATURES

MFR'S DESCRIPTION: good flexibility of space division with movable partition system allowing custom specification of varied component elements.

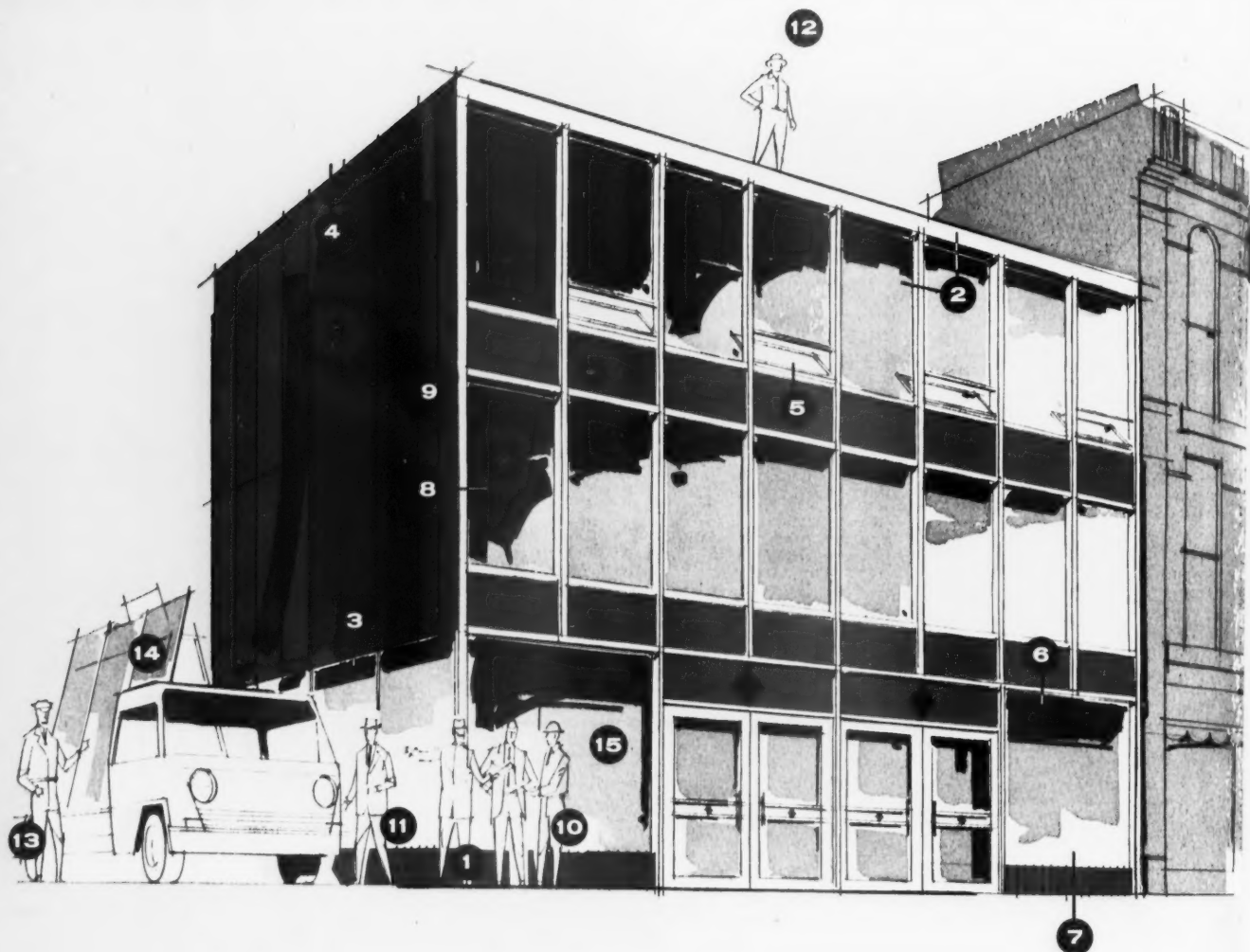
USES: partitions

SPECS/FEATURES: system can be erected without need of special tool and a minimum of effort. Partitions



Core

THE NEW AND RADICALLY DIFFERENT
BUILDING EXTERIOR SYSTEM FROM KAWNEER



Core...complete building exteriors



Kawneer's new Core System is a complete building exterior system in itself, applicable to new or old, single or multi-story construction.

Unlike present day systems, it is amazingly simple. The basic idea of the Core System is this: any needed member can be made by joining the system's components.

There are only 14 basic components in the system which can be combined to make 36 different members.



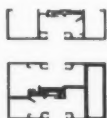
The components

are joined like this

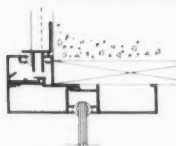
Joining the components locks them together. The locking device—the Core-Coupler (brown)—holds the components so firmly that in tests, the Core-Coupler remained intact beyond the point where extruded aluminum components failed.

- 1 The architect can detail the entire building exterior from the detail tracing sheets.

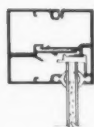
- 2 Face and gutter assemblies act as sash and division bars.



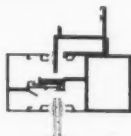
- 3 Transition member joins veneer to store front.



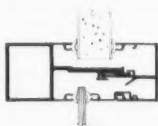
- 4 Standard terminator enables you to stop without detail problems.



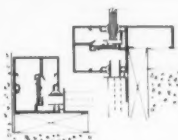
- 5 Simple adapter integrates Kawneer Sealair windows into the system.



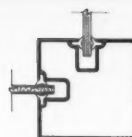
- 6 Special components accept insulating glass and 1" insulating panels. Adapter allows combinations of 1" panels and 1/4" glass.



- 7 Head and sill adapters and jamb adapters integrate Zourite and other facing materials into the store front.



- 8 Easily integrated Narrow Line members enable you to make right angles easily.



- 9 Design flexibility is built in. Three face depths can be combined with three basic gutter depths, and with veneer, transition and 1" glazing members.

- 10 There are no delivery delays. Core components are in stock. The day after the contractor decides on the Kawneer dealer, work on the building exterior can begin.

- 11 The Kawneer dealer can do the entire job rather than just the store front, because the Core System is capable of it.

- 12 The glass dealer's men don't need any drawings other than the architect's details to erect the system.

- 13 The dealer's men can do the job in at least 10% less time because the system is so simple . . . a conservative figure based on dealers' reports of test installations.

- 14 The system can be built "right off the truck," because all components are stock components, and can easily be field fabricated.

- 15 If the building is being remodeled, there is less interruption of the businesses therein, because of the speed with which the Core System can be erected. If it is new construction, occupancy is faster.

All in all, we believe you will find Kawneer's new Core System extremely useful on a variety of jobs. For more information, send the coupon on the back page.

from a single, simple system

No special shapes are needed. All you need are included in the system.

No complex joinery is needed to fit in other Kawneer building exterior components. A few simple adapters integrate them into the system.

That's the Core System; simple, versatile . . . a complete building exterior system in itself.

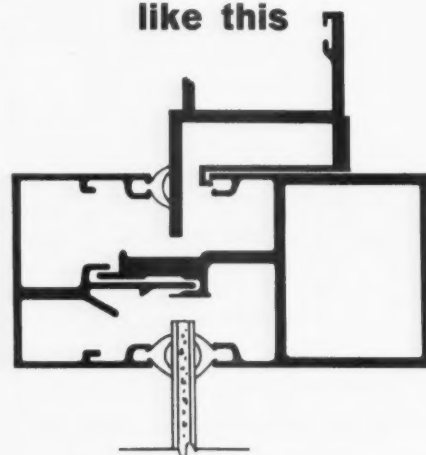
To make the advantages of the system easy to see, we have related them to a hypothetical building situation, shown above.



Kawneer materials available outside the U.S. through:
Kawneer International Limited • Kawneer de Mexico S.A. de C.V., Apartado 73 Naucalpan de Juarez, Estado de Mexico, Mexico • Kawneer Company Canada Ltd., Toronto, Ontario, 1460 Don Mills Road, Don Mills, Ontario.

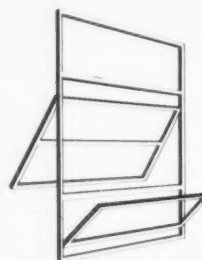
this
simple
adapter

which
fits in
like this

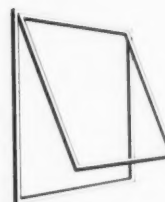


integrates Kawneer Sealair windows into the Core System

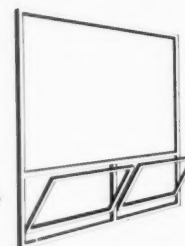
So simple. So easy. And it doesn't matter which type of Kawneer Sealair window you want to use . . . the adapter integrates all of those shown at the right into the Core System. Of course you can use Kawneer Sealair windows in any other type of construction, too. So feel free.



PROJECTED



TOP HINGED



CLASSROOM



CASEMENT

For complete Core System information, have your nice secretary mail coupon

KAWNEER COMPANY, Box 1CS, 1105 Front Street, Niles, Michigan

Gentlemen:

Please send me complete
information about
Kawneer's new and radically
different Core Building Exterior
System immediately.

Name _____
Firm _____
Title _____
City _____ Zone _____ State _____



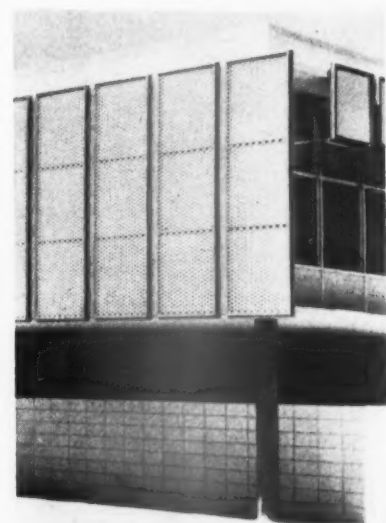
PRODUCTS, EQUIPMENT, MATERIALS

may be moved and rearranged quickly. In most cases the panels, including glazing and doors and their hardware, are factory assembled and finished and packaged ready for shipping to the jobsite. Panels consist of hardboard laminated to both sides of an insulating board. Panels are available with a variety of finishes.

AIA FILE NO. 35-H-6

MFR: SIMPSON TIMBER CO.

Circle 239 for further information



SUN CONTROL SCREEN WITH TRANSLUCENT PANELS

MFR'S DESCRIPTION: solar screen providing effective sun control with maximum ventilation and light transmission.

USES: building exteriors

SPECS/FEATURES: solar grids are fabricated of reinforced plastic corrugated panels. Honeycomb effect is achieved by stacking 2" and 3" strips of standard paneling cut across corrugations.

AIA FILE NO. 17-A

MFR: ALSYNITE DIV., REICHHOLD CHEMICALS, INC.

Circle 240 for further information

TEMPORARY PARTITIONS OF TRANSLUCENT PANELS

MFR'S DESCRIPTION: a temporary partition system, designed to meet the need for a rapid and flexible method of dividing large and small interiors.

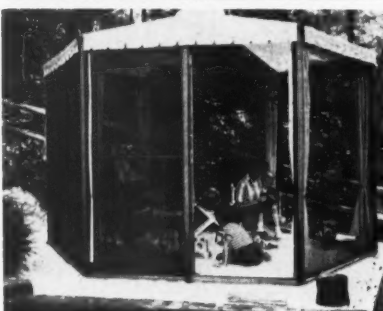
USES: interior temporary partitions
SPECS/FEATURES: system consists of translucent panels bonded to an aluminum grid. Panels measure 4'x8' x1 1/16" and weigh 48 lbs. each. Panels allow a relatively high degree of light transmission.

AIA FILE NO. 35-H-6

MFR: KALWALL CORPORATION

Circle 241 for further information

PREFAB HOUSING/SHELTER



POOLSIDE PAVILION FOR MULTI-PURPOSES

MFR'S DESCRIPTION: a roomy poolside pavilion that can double as a dressing and dining area or can be used for almost any purpose.

USES: residential and commercial applications

SPECS/FEATURES: hexagon-shaped structure available in either redwood or teak framing. Screening is of weatherproof glass fiber. The roof is a water-repellent canvas and is topped by a plastic cupola for skylighting and extra ventilation. Optional are two fold-away dressing spaces and sliding side curtains. Once installed, the pavilion is permanent. Only canvas roof and side curtains need be removed during snow season, according to manufacturer. Pavilion designed for either flat or gently sloping sites and can be installed on grass, earth, concrete, sand or flagstone. It has a frame of six posts and beams. Frame occupies approximately 100 sq. ft., with eave height of 6'-6" and a center peak of 8'-6".

AIA FILE NO. 36-A

MFR: RECREATION DESIGNS, INC.

Circle 242 for further information

NEW UTILITY HOUSE SERVES MULTI-PURPOSES

MFR'S DESCRIPTION: a multi-purpose utility house, designed to solve shelter problems economically in many applications.

USES: residential, commercial, industrial and institutional guard- or gate-house

SPECS/FEATURES: utility house, available in three sizes and a variety of porcelain enameled colors, is engineered to be adaptable to almost any climate, terrain or purpose. House features a laminated wall system with steel exterior and interior panels and a plywood-polyurethane insulation core. Ten exterior colors and three interior shades are available. The three sizes, 4'x4', 4'x6' and 4'x8' are complete with sliding

aluminum windows on all four sides. With the exception of a swinging door on the smallest unit, sliding doors are standard. Also included is complete electrical wiring, interior lighting, and an electrical plug-in strip around the interior perimeter.

AIA FILE NO. 35-N

MFR: ERIE ENAMELING CO.

Circle 243 for further information

PREFABRICATED FALLOUT SHELTERS

MFR'S DESCRIPTION: shelters offered as meeting standards of OCDM.

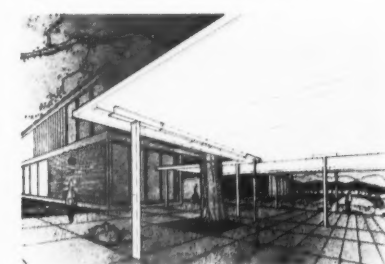
USES: basement and underground shelters

SPECS/FEATURES: fabrication of these shelters use the mass-produced components now manufactured by the company. Basement shelter, which can double as an auxiliary living area, is made of steel-panel walls and ceiling filled with sand. It can be purchased as a package of components for under \$400. Its 9'x10' floor area and 6'-2" height is said to provide adequate space for 8 persons, and can be modified by various combinations of standard parts. The underground shelter is a corrugated-steel structure installed outside the house under an earth cover. It is oval shaped. Equipped with air blower, vents and racks for bunks, it can be delivered and installed for less than \$1800, depending on site conditions and delivery charges. It is 6'-8" high, 12' long and 8'-10" wide. Both shelters meets standards of the Office of Civil Defense and Mobilization.

AIA FILE NO. 4-E-71

MFR: ARMCO DRAINAGE & METAL PRODUCTS, INC.

Circle 244 for further information



ECONOMY STEEL CANOPIES FOR WALKWAYS/PARKING AREAS

MFR'S DESCRIPTION: new series of low-cost steel canopies offering weather protection for walkways and parking areas.

USES: exposed areas

SPECS/FEATURES: canopies are available in some sizes for 70¢ per sq ft. Widths range from 6' to 40'; heights from 8' to 15'; lengths unlimited. Panels are available in several steels coated with either zinc or aluminum. Supporting posts and beams are

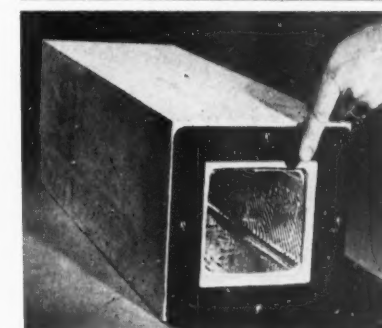
heavy-gauge painted members with a box-like cross section which forms a conduit for wiring. Canopies are delivered with structural system, roof, bolts and a combination gutter-fascia that encloses all four sides of the roof.

AIA FILE NO. 14-W

MFR: ARMCO STEEL CORP.

Circle 245 for further information

MISCELLANY



SHIELDING GLASS WINDOWS FOR FALLOUT SHELTERS

MFR'S DESCRIPTION: radiation-shielding glass windows for use in residential and public fallout shelters.

USES: protection

SPECS/FEATURES: windows designed for use in walls of above-ground and basement shelters and designed to help ease the psychological strain of extended confinement. Manufacturer says the solid piece of clear glass is denser than ordinary concrete and offers more resistance to radiation than the walls of a shelter. Windows available in standard thicknesses of 16", 18", 21", 24" and 36". Glass is 4" sq. and entire unit—glass, frame and casing—measures 7 5/8" x 7 5/8".

AIA FILE NO. 26-A-9

MFR: CORNING GLASS WORKS

Circle 246 for further information

NEW "LIQUID GLASS" FOR METALS/MASONRY

MFR'S DESCRIPTION: a hard yet resilient water-white, corrosion resistant clear metal and masonry coating.

USES: surface coating for metals and masonry

SPECS/FEATURES: with brush or spray application, coating is a ready-mixed protector which dries almost instantaneously and adheres to aluminum, stainless steel, brass, copper, galvanizing and almost all commercially used metal surfaces. It is said to be highly resistant to acids, alkalies, solvents, and fuels, as well as sea water, steam and sustained ultraviolet exposure.

AIA FILE NO. 25-B

MFR: WILBUR & WILLIAMS CO., INC.

Circle 247 for further information

True water repellency!



Silaneal helps prevent leaky walls

These brick "chimneys" prove that Silaneal® helps prevent leaks and improves the bond of high suction brick. Both test tanks were built by the same mason, using full head and bed joints from the same batch of mortar and the same type of high suction rate brick. The only difference: tank at right was built of brick treated with Silaneal sodium silicate. Filled with 8 inches of water, this tank showed no signs of leakage . . . even after five hours! The tank of untreated brick developed leaks even as it was being filled.

Why Does Silaneal Make Such A Difference?

1. It is applied to brick under tested and controlled conditions by brick manufacturers only.
2. It reduces the rate at which high suction rate brick absorbs water from mortar.

Result: Keeps mortar from drying too fast and shrinking. Eliminates hair-line cracks between brick and mortar. Minimizes water seepage through finished walls.

Silaneal Keeps Brick Clean, Too . . . When water penetrates brick, it carries dirt into the surface, causing unsightly discoloration. And water leaches salts out of the brick, forming efflorescence. Silaneal repels water; keeps dirt outside where it's rain-washed away. Ugly efflorescence is minimized . . . beauty is preserved.

For illustrated brochure describing Silaneal in more detail, plus list of brick manufacturers offering Silaneal-treated brick, write Dow Corning, Dept. 1124.

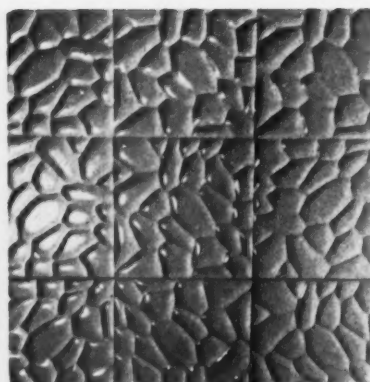


NOTE: There are several brick manufacturers who produce brick having low suction which already perform similar to a Silaneal treated brick. Little improvement in efflorescence control and reduction in dirt pickup could be accomplished by treating this type of brick with Silaneal. Silaneal treatment would not improve the laying properties of this type of brick.

Dow Corning CORPORATION
MIDLAND, MICHIGAN

Circle 116 for further information

PRODUCTS, EQUIPMENT, MATERIALS



NEW PLASTICS TILE WITH PEBBLE EFFECTS

MFR'S DESCRIPTION: wall tile with a three-dimensional surface that has the appearance of inlaid pebbles.

USES: tiling walls

SPECS/FEATURES: tile available in 4 1/4"x4 1/4" squares and a variety of colors. Thickness, dimensional stability and material quality of the new tile are said to exceed VA and FHA requirements.

AIA FILE NO. 28-C

MFR: GUILDCREST CORP.

Circle 248 for further information

POLYURETHANE FINISH FOR METALS/WOODS

MFR'S DESCRIPTION: new, clear finish developed for exterior and interior applications.

USES: finishing woods and metals

SPECS/FEATURES: finish developed to withstand extreme weather, sea spray, acids, alcohol, and ultra-violet rays. Finish can be applied by brush, spray or roller and dries to touch in 45 minutes. It can be walked on in less than 2 1/2 hours. Waxing is said to be unnecessary and finish can be cleaned with soap or detergents.

AIA FILE NO. 25-B-11

MFR: MARTIN-SENOUR CO.

Circle 249 for further information

HOT WATER ZONE VALVES ELECTRICALLY CONTROLLED

MFR'S DESCRIPTION: high torque motor controlled zone valve for zoning hot water heating systems under 50 psi limits.

USES: residential, light commercial and industrial

SPECS/FEATURES: valve features a motor system and gear train encased in a permanent lubricating fluid. Shaded pole motor replaces conventional "clock-type" synchronous motors. All gears are made of Delrin. Barrel-type valve stem is self-aligning and utilizes line pressure closing. Valve bodies have bayonet-type attachment lugs, and are one-piece cast

in low-zinc content brass. Valve can be operated manually and allows an automatic recycling to the thermostat setting. Terminal panel is built with push-in connections for thermostat wires.

AIA FILE NO. 31-N

MFR: WHITE-RODGERS CORP.

Circle 250 for further information



COMPUTER CENTERS FOR HOSPITALS

MFR'S DESCRIPTION: system for controlling and scanning mechanical operation of hospitals.

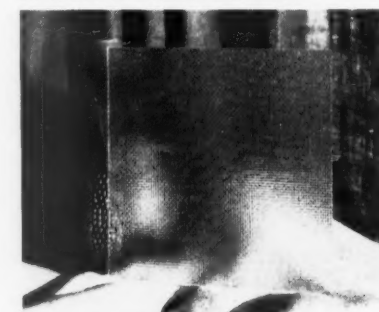
USES: checking on mechanical equipment in hospitals

SPECS/FEATURES: centralized control includes automatic logging and scanning. Temperatures, humidities, pressures, flows and other variables from 100 remote points can be automatically logged by the electric typewriter as it types out three-digit "bits" of information every second. A continuous scanner turns on an alarm if any checkpoint is off range.

AIA FILE NO. 35-K

MFR: MINNEAPOLIS-HONEYWELL REGULATOR CO.

Circle 251 for further information



PATTERNED GLASS WITH "BURLAP" EFFECT

MFR'S DESCRIPTION: patterned glass textured to simulate "burlap" texture.

USES: glass pattern applications

SPECS/FEATURES: "burlap" pattern is designed primarily for use in partition, shower door and stall installations. Thicknesses available are 1/8" and 1/32". Maximum size is 60"x132". Figured "burlap" texture is said to

be highly obscure and have excellent diffusing properties.

AIA FILE NO. 26-A-6

MFR: MISSISSIPPI GLASS CO.

Circle 252 for further information



ROOF FRAMING CALCULATOR COMPUTES RAFTER LENGTHS

MFR'S DESCRIPTION: calculator determines rafter lengths for roof projects with precision.

USES: framing calculations

SPECS/FEATURES: framing calculator is not a gadget. It is a precision computer designed solely for solving roof framing problems and is calibrated like any common ruler. Determines requirements such as added length for 2' overhangs, angle cuts, hip rafter lengths, radial arm saw setting, first hip, jack dimension, proper plumb and level cuts, and material lengths.

AIA FILE NO. 35-H-3

MFR: EMMERT PRODUCTS CO.

Circle 253 for further information

LIGHTWEIGHT FIBER GLASS HEATING/AC DUCT SYSTEM

MFR'S DESCRIPTION: a new glass fiber duct system.

USES: residential and commercial heating and air conditioning

SPECS/FEATURES manufacturer says duct system can be installed faster than conventionally insulated or lined sheet metal ducts. Only work required at job site is the joining of the duct sections. System can be used at temperatures up to 250° and to a velocity of 1,500 FPM. Rectangular ducts available in 4' lengths and in a 1" thickness with inside dimensions ranging from 8"x8" to 24"x8". Round ducts available in 6' lengths with inside diameters from 4" to 18" in thickness of 3/4" to 1". Flat duct boards available in thickness of 1", 1 1/2" and 2" in 48" widths from 24" to 120" long.

AIA FILE NO. 30

MFR: OWENS-CORNING FIBERGLAS CORP.

Circle 254 for further information



MAHON MULTI-USE LONG-SPAN M-DECKS

... find ready utilization
in ambitious Detroit
urban-renewal project!

Architects and engineers know Mahon Long-Span M-Decks as a valuable ally in curbing construction costs without sacrificing design expression. M-Decks are proven, multi-purpose roof sections that can be functionally used in a variety of ways—even as a *combined structural roof deck and ceiling system*. Why not find out how space-spanning (truss-to-truss) M-Deck can help you ... your projects ... your costs? Call in your local Mahon architectural representative or write for the new catalog LSD-61.

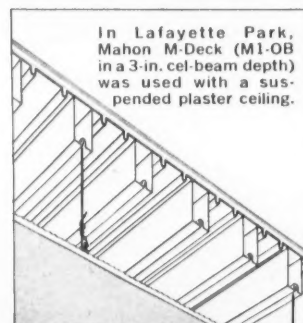
THE R. C. MAHON COMPANY

Detroit 34, Michigan

Manufacturing Plants—Detroit, Michigan and Torrance, California

Sales-Engineering Offices in Detroit, New York, Chicago, Torrance and San Francisco
Representatives in all principal cities.

SPEEDING AMERICAN CONSTRUCTION WITH METAL BUILDING PRODUCTS, FABRICATED EQUIPMENT AND ERECTION SERVICES



In Lafayette Park, Mahon M-Deck (M1-OB in a 3-in. cel-beam depth) was used with a suspended plaster ceiling.

MAHON LONG-SPAN M-DECK SECTIONS

Standard M-Deck types now in manufacture by Mahon. Special form sections can also be supplied.



Design for Living, City-Style—Mies van der Rohe's Lafayette Park Development in downtown Detroit. Mahon Long-Span M-Deck was used as the roof system in all 22 low-rise building units. Contractor: Herbert Construction Co., Chicago

MAHON BUILDING PRODUCTS

- Aluminum or Steel Curtain Walls (in natural or colored metals)
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Metalclad Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions and Roof Decks
- Permanent Concrete Floor Forms

CONSTRUCTION SERVICES

- Structural Steel-Fabrication and Erection
- Steel Fabrication-Weldments
- Geodesic Domes—Fabrication and Erection

Circle 117 for further information

MAHON

LITERATURE

Literature cited in this department is available from various manufacturers and associations free of charge, except where indicated. To obtain copies, circle the keyed numbers on the reader service cards facing pages 1 and 66.



ACOUSTICS

Publication deals with the effectiveness of a cellular glass acoustical unit in a variety of applications. Booklet explains the necessity of sound control and the importance of adequate sound absorption and diffusion. Actual job photographs, along with architecturally designed sketches, are included. Also listed is the amount of treatment needed for average applications. (12 pp.)

AIA FILE NO. 39-B

MFR: PITTSBURGH-CORNING CORP.

Circle 300

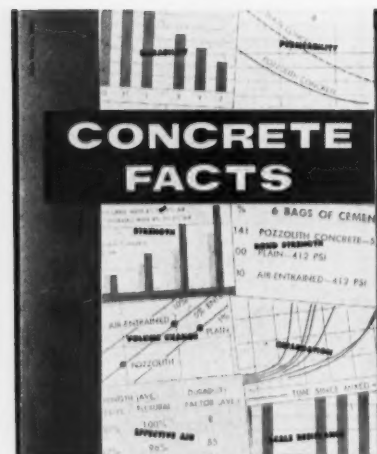
MODERN MAPMAKING/CHARTS

A short color illustrated course on the production of modern charts and maps is provided in an informative brochure. With the help of graphic diagrams manual explains the fundamentals of producing color separated maps.

AIA FILE NO. 1-C

MFR: KEUFFEL & ESSER CO.

Circle 301



CONCRETE FACTS

A comprehensive analysis of nine important factors governing high quality concrete production is treated in simplified form by a new publication. Graphic account is given of additive's ability to give concrete increased flexural, bond and compressive strength; effectively entraining air; increased workability and durability; reduced shrinkage and permeability; and initial retardation and resistance to scaling. Charts, graphs and photographs of field and laboratory tests help to support these facts. (6 pp.)

AIA FILE NO. 3-B-2

MFR: POZZOLITH DIV., THE MASTER BUILDERS CO.

Circle 302



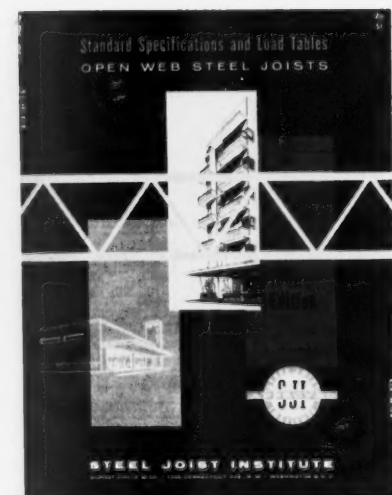
SCANDINAVIAN FURNITURE

The Lunning collection was designed for use as well as for aesthetic quality. Each piece is based on the concepts of comfortable seating, convenient storage, adequate dining and working surfaces. Brochure contains over 200 drawings and photographs of each piece of furniture, lighting fixtures and fabrics offered in the series. Detailed information on dimensions and other pertinent data is also provided. (72 pp.)

AIA FILE NO. 28-A

MFR: FREDERIK LUNNING INC., DIV. OF GEORG JENSEN INC.

Circle 303



STEEL JOISTS SPECS

The newly revised standard specifications and load tables for high-strength web steel joists contain new data for three types of joists. With the new specifications, architects and engineers can now specify open web steel joists that are completely compatible with structural steel specifications and design. (52 pp.)

AIA FILE NO. 13-G

ASSN: STEEL JOIST INSTITUTE

Circle 304



design data for Teco
TRIP-L-GRIP
framing anchors

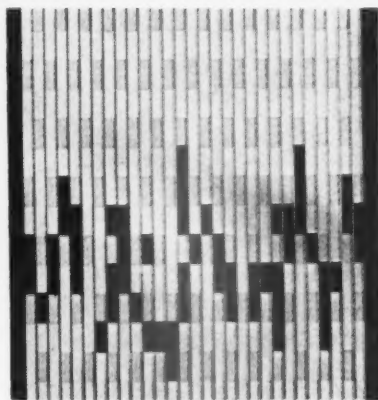
WOOD FRAMING ANCHORS

Folder presents design and technical information on the use of a series of wood framing anchors. Illustrated in detail are ten applications where these anchors can be used in floor, roof, wall and ceiling framing. Included among structural applications illustrated in the folder are: floor joists to beams; rafters and joists to plates; lintels or sills to jambs; dormer framing; rafters to purlins; corner posts; solid blocking and stair carriages to headers or trimmers. A table of safe working values is based on laboratory tests of the framing device.

AIA FILE NO. 27-A

MFR: TIMBER ENGINEERING CO.

Circle 305



COLOR AND CURTAIN WALLS

Folder by Peter Blake AIA reviews color and styling "monotony" in curtain-wall construction from its beginnings until the present day. Various ways of using color and some vertical and horizontal curtain-wall styles are discussed. (6 pp.)

AIA FILE NO. 17-A

ASSN: PORCELAIN ENAMEL INSTITUTE

Circle 306



WELTON BECKET BLDG. LOS ANGELES, CALIF.

CRISP LINES, CLEAR VIEW, COMMON SENSE FLUSH MOUNTED LOCKING UNITS FOR SLIDING GLASS DOORS

The wide acceptance of the sliding glass door results from its visual depth and spaciousness. Hardware which impairs the view or prevents the door from fully opening defeats the purpose. The Adams Rite 4189 and 4190 flush mounted locksets are the first to offer unobtrusive beauty and freedom of movement for these doors. Screens can be by-passed, doors can be "stacked" in pockets, and inside drapes or blinds will not be torn by catching on surface hardware.

The pull escutcheons are designed to accent the narrow vertical lines of the aluminum door frame.

Deeply recessed finger pulls provide exceptional control of door movement. Slide-button operator actuates locking mechanism from inside with simple up or down movement. Key control is provided on 4190 unit by 5-pin cylinder lock in outside escutcheon.



WRITE TODAY For Complete
Details and New Catalog

ADAMS RITE
MANUFACTURING COMPANY

540 West Chevy Chase Drive, Glendale 4, California

Circle 118 for further information





NEW 1962 MARLITE CATALOG RIGHT NOW? WRITE NOW!

Room illustrations in full color. Accurate color and pattern reproductions. Complete specs and details on 4' x 8' Deluxe Hi-Gloss Panels, Woodpanels, Marble Patterns, Celestial Patterns, Peg-Board, Fleece and Lace; 16" x 8' Planks and Random Planks; 16" square Blocks; 2' x 8' Korelock. They're all in this catalog—write for yours right now to Marlite Division of Masonite Corporation, Dept. 1266, Dover, Ohio.

Marlite
plastic-finished paneling

MARLITE IS ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

Circle 119 for further information

POSITIVE BOND INSURED

Concrete to
Concrete
to Metal
to Wood
with

STA-CRETE EPOXIES

Surface-resurface Economical. Easy to apply to a feather edge. No chipping—No roughing—No tamping—No priming necessary. Harder—Many times stronger than concrete. Yet flexible. Withstands tremendous loads. Never shrinks. Hardens from internal chemical reaction. NOT from evaporation.

See your dealer or write

STA-CRETE, INC.
115 New Montgomery St.
San Francisco 5, Calif.

Circle 120 for further information



TEST PATCH
YOU WILL
BE CONVINCED

LITERATURE

LIGHTING



DRAFTING/OFFICE LIGHTING

Detailed, illustrated brochure describes a complete series of portable lighting items for drafting rooms and offices. Brochure includes descriptions of lamps for magnified fluorescent illumination and other lighting accessories. (12 pp.)

AIA FILE NO. 31-F-2

MFR: ACME LITE PRODUCT CO., INC.

Circle 307

COMMERCIAL LIGHTING

A new series of commercial and industrial lighting fixtures is incorporated in a compact booklet. Complete with illustrated index, brochure contains descriptions of fixtures, installation suggestions. (24 pp.)

AIA FILE NO. 31-F

MFR: DAY-BRITE LIGHTING, INC.

Circle 308



LIGHTING WITH PLASTICS

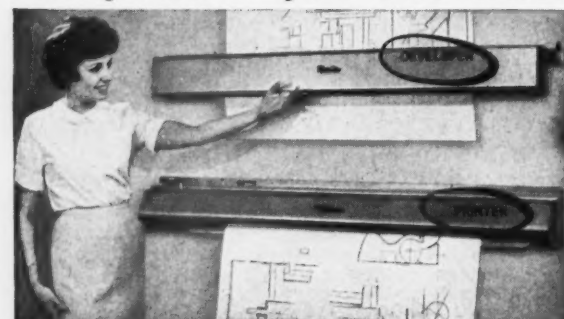
A second edition of a comprehensive plastic lighting manual has just been made available. Brochure has been up-dated to include a series of white opal polystyrene and acrylic prismatic lens panels. Each lens is illustrated and completely described by charts and graphs.

AIA FILE NO. 24

MFR: K-S-H PLASTICS, INC.

Circle 309

The PERFECT PAIR for making faster whiteprints in your own office



This is our NEW Automatic Developer— The Rotolite Thermomatic—WITH HEAT.

Rotolite Expediter, the printer—

The least expensive whiteprinter in the world and prices include standard tube-type developer. Finger tip speed control, dry paper-vapor developer. Fastest diazo lamp on the market. Models start at \$129.50.

Rotolite Thermomatic, the Developer—

A new, continuous ammonia developer. It's heated! The first low cost developer to give true black-line, as well as blue and sepia. Heat develops faster, gives better quality and more even development. One trouble free filing per day. No clogging or leaking. No venting.

For Fast Reply
Mail Coupon
direct to:

ROTOLITE
SALES CORP.
STIRLING,
N. J.

ROTOLITE SALES CORPORATION, E-12
Stirling, N. J. Phone Millington 7-1040
Please send literature on ☐ Rotolite Expediter
☐ Rotolite Automatic
Developer

Name _____
Concern _____
Address _____ City _____ State _____

Circle 121 for further information

New!

**Vitreous
Enamel
in 17
Radiant
Colors**

Add modern, eye-catching color to tablets and 3-D facade letters by specifying U.S. Bronze hard-fired, vitreous enamel. Available in 17 radiant colors plus black and white—this durable material is hard as granite and smooth as glass—requiring no maintenance or polishing.

Write today for our free illustrated color catalog plus full information on a complete line of lifetime plaques and letters available in 6 metals plus vitreous enamel—at prices to please any budget.

USB

UNITED STATES BRONZE SIGN CO., INC.

(Free Design Service) Dept. AE, 101 W. 31st St., New York 1, N. Y.

Circle 122 for further information

Architectural & Engineering News

LITERATURE

OFFICE AIDS

TRANSPARENT COLOR TAPES

A new and informative brochure on a series of self-sticking tapes in transparent colors with glossy or matte surfaces has been made available. Actual samples of the glossy and matte surface tapes are found on the covers of the brochure. In addition to suggested usage and descriptive information on both types of tapes, brochure carries a list of colors, sizes, prices and information on ordering.

AIA FILE NO. 35-H-3
MFR: ACS TAPES, INC.
Circle 310

WHITEPRINTER BULLETIN

Bulletin describes and illustrates design and operating details of a 42" capacity low-priced whiteprinter.

AIA FILE NO. 35-H-3
MFR: OZALID DIV., GENERAL ANILINE & FILM CORP.
Circle 311

DIAZO WHITEPRINTERS

A series of automatic diazo developers is featured in a new bulletin. Full descriptions and dimensions of the five models in the series are discussed in detail.

AIA FILE NO. 35-H-31
MFR: ROTOLITE SALES CORP.
Circle 312

MICROFILMING

Costs and time savings with the use of microfilm for storage of engineering data is the subject of a new brochure. Procedures and other microfilm data are included. Booklet is presented in the form of a case study of one application.

AIA FILE NO. 35-H-31
MFR: MINNESOTA MINING & MANUFACTURING CO.
Circle 313

METAL USES

RESIDENTIAL STEEL FRAMING

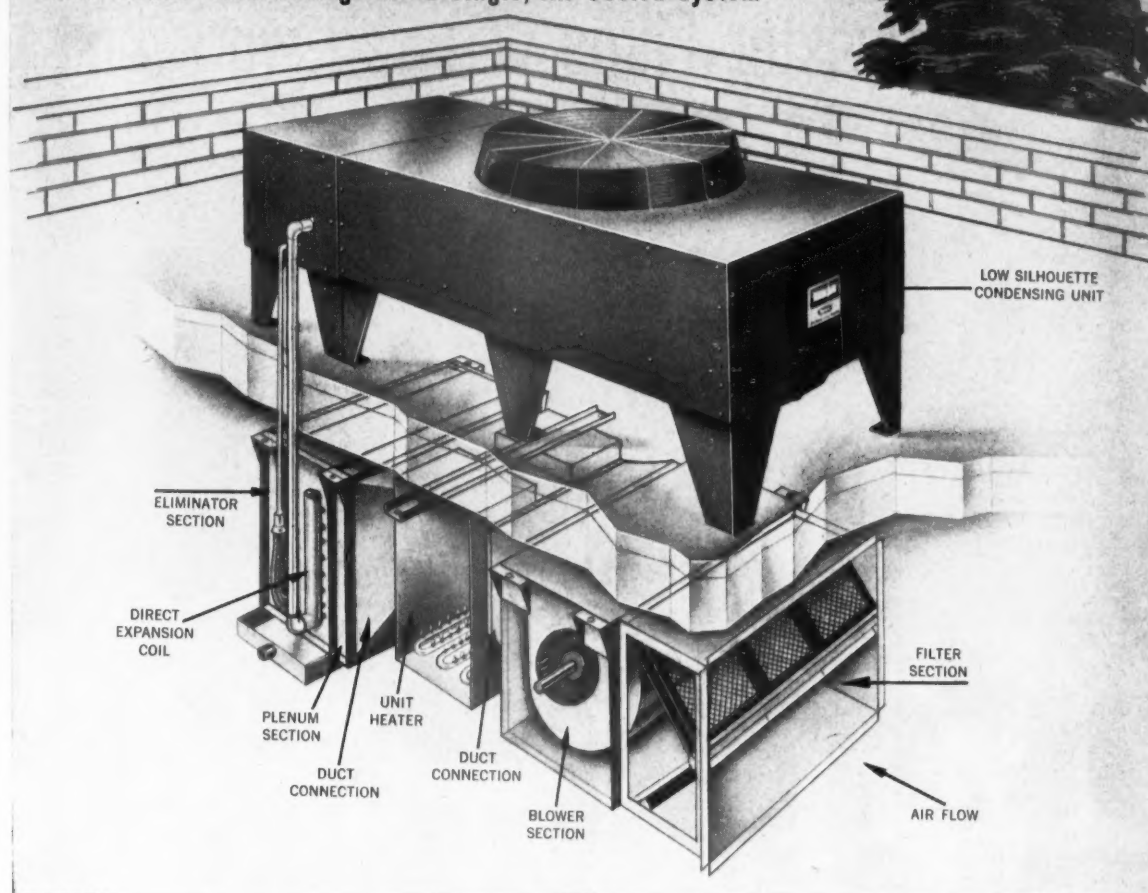
Brochure contains 9 reprints of magazine articles on the use of steel framing in homes. Various styles of homes and sites are shown, as are detailed photographs and layouts. (39 pp.)

AIA FILE NO. 13-G
MFR: BETHLEHEM STEEL CO.
Circle 314

STRUCTURAL STEEL MANUAL

Revised edition of *Hot rolled carbon steel shapes and plates* gives design and detailing information on structural steels and includes nominal dimensions, weights, properties and dimensions for detailing. Data pertaining to other rolled products in common use by architects and engi-

Year 'Round Conditioning with a Single, Air Cooled System



...THE "ALL-SEASONS" SYSTEM BY DUNHAM-BUSH

Both heating and cooling are provided by the sensibly-engineered, economical Dunham-Bush "ALL-SEASONS" System. And the system's flexibility permits its use in a wide range of buildings—shopping centers, medical clinics, bowling alleys and many other single story structures.

Important space savings are made possible in two ways: low side equipment is suspended from the ceiling (conserving floor space); high side components may be installed on the roof or in a room remote from the conditioned area. Through the use of duct work it is possible to condition partitioned areas or separate rooms.

Major components of the system—"HAH" air handler and "LSCU" condensing unit—are tested, proved Dunham-Bush products...in combinations carefully engineered and matched for maximum performance and economical operation.

Features of the system include:

- Packaged components eliminate expensive field installation costs.
- Central control station provides for remote operation.
- Pilot lights for visual check on performance.
- A.G.A. approved gas fired, warm air heating system. No gas lines in the conditioned area.
- Final piping connections can be made outside the conditioned area.

"ALL-SEASONS" systems are available in 16 different matched combinations. Range: 15 to 30 Tons cooling; 175,000 to 450,000 BTU/hr. heating.

Request Form No. 6025.

DUNHAM-BUSH

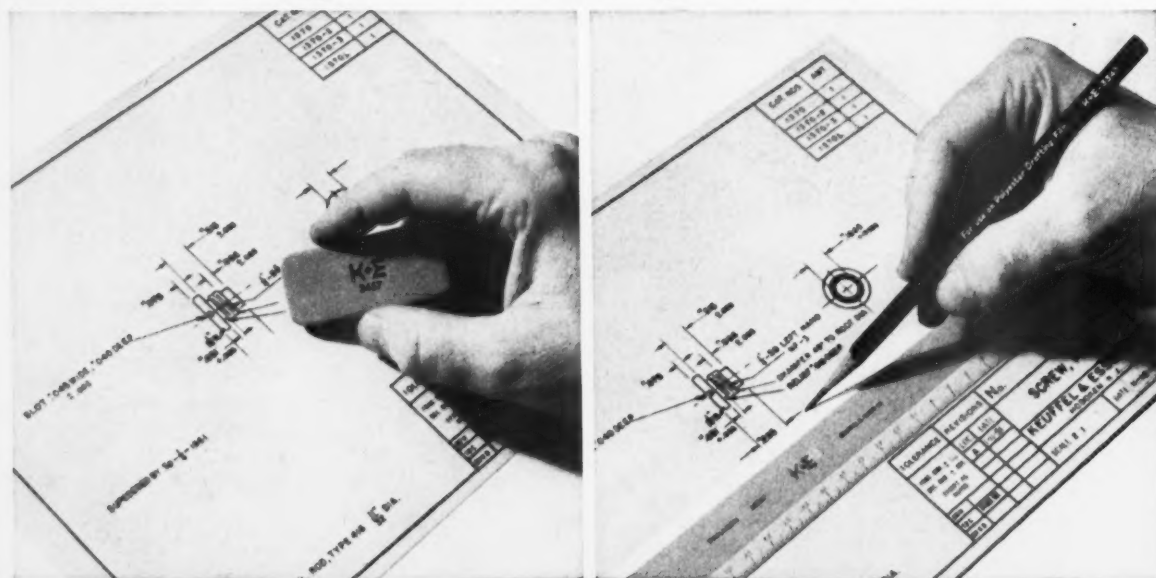
DUNHAM-BUSH, INC.

WEST HARTFORD 10, CONNECTICUT, U. S. A.

SALES OFFICES LOCATED IN PRINCIPAL CITIES
Circle 123 for further information

For engineering "duplicate originals"...

Use the Polyester Films you can work on



PHOTACT[®] by K & E

To perfect an engineering drawing requires constant revision, addition and change. Yet most photographic polyester films on the market today reflect a disregard for this fact by combining photo emulsion and drafting surface in a single surface layer. If you mechanically erase image lines on these films the drafting surface is removed, and pencil or ink will no longer take on the film surface. The only alternative is to use eradicators, a time-wasting, nerve-frazzling process.

Only PHOTACT Polyester Films have an additional drafting surface *beneath* the photo emulsion. No eradicators needed. Repeated erasures easily made. In short, the answer to a draftsman's prayers.

Erase cleanly. Using a mildly abrasive Van Dyke eraser (K&E 3457) image lines can be whisked off completely in nothing flat. Even tight, detail lines which are too tightly arranged for eradicators can be removed with a stick-pencil eraser.

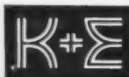
Re-draw Repeatedly. The matchless K&E engineered drafting surface won't lose its "take" or erasing qualities

even after many revisions, one on top of the other. To apply lines of ink-like density, we recommend one of a wide range of new Ruwe plastic-graphite pencils or drawing leads.

Get Perfect Duplicates and Prints. The PHOTACT emulsion yields solid blacks, true to the original drawing with no fill-in or drop-out. Wide exposure latitude almost guarantees that the first exposure is the right one. Prints are developed in regular *paper* developer; high-priced, short-lived litho developers are not necessary.

PHOTACT Polyester Films are available in three basic types—Contact (409) for same-size exposure; Direct Positive (411) for same-size positives from transparent originals; Projection (419) for prints from microfilm negatives.

FREE... New PHOTACT Selection Guide. Just off the press, K&E has available a new guide to the use and selection of PHOTACT materials. It's crammed full of time-saving tips, quick-reference charts and processing hints. Your copy is free for the asking. See your local K&E dealer or fill out and mail the coupon below.



KEUFFEL & ESSER CO.

NEW YORK • HOBOKEN, N. J. • PHILADELPHIA • DETROIT
CHICAGO • MILWAUKEE • ST. LOUIS • DALLAS
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Circle 124 for further information

KEUFFEL & ESSER CO., Dept. AE-12, Hoboken, N. J.

Gentlemen:

Please send me your new PHOTACT Selection Guide.

Name & Title: _____

Address: _____

4257-A

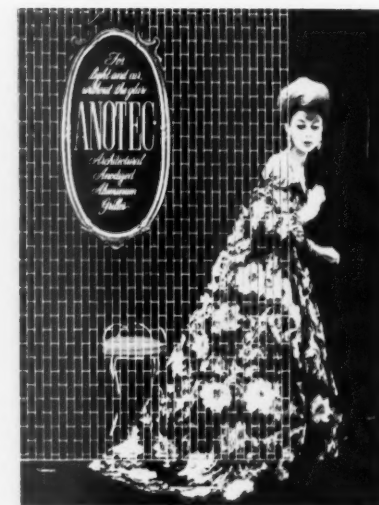
LITERATURE

neers are included as a matter of ready reference. Information on several new, recently added light weight beams is included. (77 pp.)

AIA FILE NO. 13-B

MFR: UNITED STATES STEEL CORP.

Circle 315



ANODIZED ALUMINUM GRILLES

A new architectural anodized aluminum grille data and specification manual. Manual provides product specifications, with technical drawings of the various patterns, plus illustrations in color showing a variety of different applications.

AIA FILE NO. 14

MFR: KLEMP CORP.

Circle 316

"FOUR GATEWAY CENTER"

File folder displays the use of steel curtainwall in the construction of Four Gateway Center in Pittsburgh. Various photographs of the completed building and details of the curtainwall system used are shown.

AIA FILE NO. 17-A

MFR: U. S. STEEL CORP.

Circle 317

RAISED PATTERN FLOOR PLATE

Folder discusses advantages of a raised pattern floor plate. Dimensions, weights, allowable uniform load and other data are included. (4 pp.)

AIA FILE NO. 14-R

MFR: U. S. STEEL CORP.

Circle 318

ARCHITECTURAL METALS

A newly-revised edition of *Architectural Metals*, which was awarded the *Certificate of Merit* in the 1960 Building Products Literature Competition sponsored by the AIA and the Producer's Council, Inc., has been issued.

LITERATURE

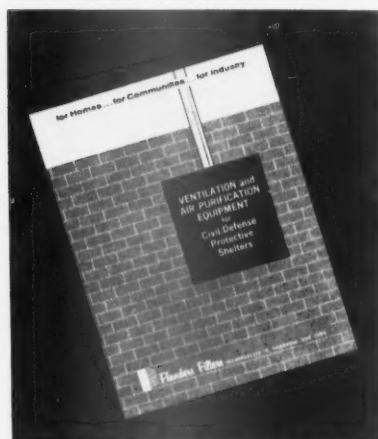
Information contained in this book has been compiled for the benefit of architects, engineers, draftsmen and specification writers concerned with the processing, fabricating and installation of copper, brass, bronze and nickel silver in architecture. Book was prepared with the express purpose of providing reliable information that will lead to the intelligent and economical use of these metals. (64 pp.)

AIA FILE NO. 15

MFR: ANACONDA AMERICAN BRASS CO.

Circle 319

FALLOUT SHELTERS



FALLOUT SHELTER FILTERS

Booklet details 24 filtration systems recommended for Office of Civil and Defense Mobilization approved fallout shelters for residential applications, as well as 8 larger systems for community and industrial shelters. (25 pp.)

AIA FILE NO. 30-D-3

MFR: FLANDERS FILTERS, INC.

Circle 320

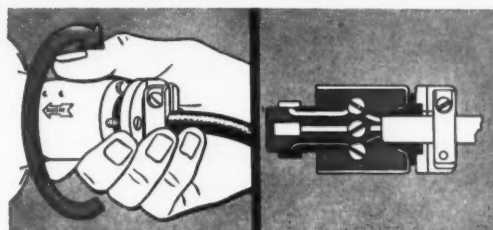
ELECTRICITY FOR SHELTERS

Folder designed to answer all the basic questions about emergency electric power for use in residential fallout shelters. All equipment discussed has been listed as suitable for residential use by the Office of Civil Defense and Mobilization, according to the manufacturer. Brochure discusses fuel needed, location of generator inside or outside a shelter and possible accessories needed or required. A list of typical electric appliances and their wattage requirements, along with information on how to estimate total wattage needs, are also given.

AIA FILE NO. 31-A-61

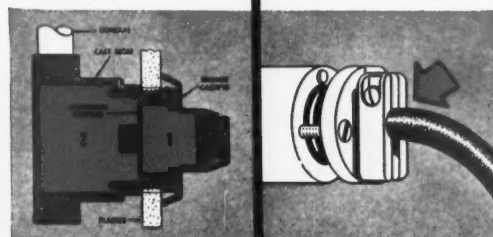
MFR: ONAN DIV., STUDEBAKER-PACKARD CORP.

Circle 321



NO ARCING WHEN PLUGGING OR UNPLUGGING. Outlet is electrically "dead" until plug is inserted and rotated 22-25°. Reverse turn disconnects current before plug is removed. Spring pressure and keyed construction prevent accidental disconnection.

NO AIR SPACE INSIDE PLUG TO COLLECT GAS OR MOISTURE. After plug is wired to cord, electrician pours a self-hardening insulating resin into all air spaces. Interior of plug becomes solid, water-tight, vapor-tight mass.



TWO SAFETY CHAMBERS IN WALL OUTLET. Gas-tight chamber No. 1 (brass and aluminum castings) contains and seals off switching mechanism. Cast iron chamber No. 2 keeps minor internal explosions from spreading to room.

CORD CANNOT PULL OUT OF PLUG. Double-clamping cord-grip relieves strain on plug terminals. And because terminals and wires are completely embedded in insulating resin, connections cannot loosen to cause arcing.



EXPLOSION-PROOF *Hubbellock* **WIRING DEVICES**
REGISTERED TRADEMARK OF HARVEY HUBBELL, INCORPORATED

NEW

EXPLOSION-PROOF RECEPTACLE AND PLUG

FOR CLASS I, GROUP C OR D, ATMOSPHERES

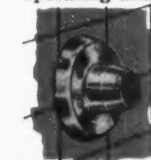
The Hubbellock Explosion-Proof Receptacle and Plug prevent arcing when electrical connections are made or broken in explosive atmospheres. No special wiring is required for installation in new or existing structures.

There are no air spaces in the plug where explosive gases can collect. No current can flow to the receptacle contacts while the plug is being inserted or removed. Switching takes place inside a vapor-sealed safety chamber of heavy bronze and aluminum castings.

Any 20-ampere, 125-volt, 60 cycle A.C. appliance may be operated from the receptacle by

substituting the Hubbellock Explosion-Proof plug for the present plug. Appliances equipped with the Explosion-Proof plug will also operate in conventional 3-wire Hubbellock receptacles.

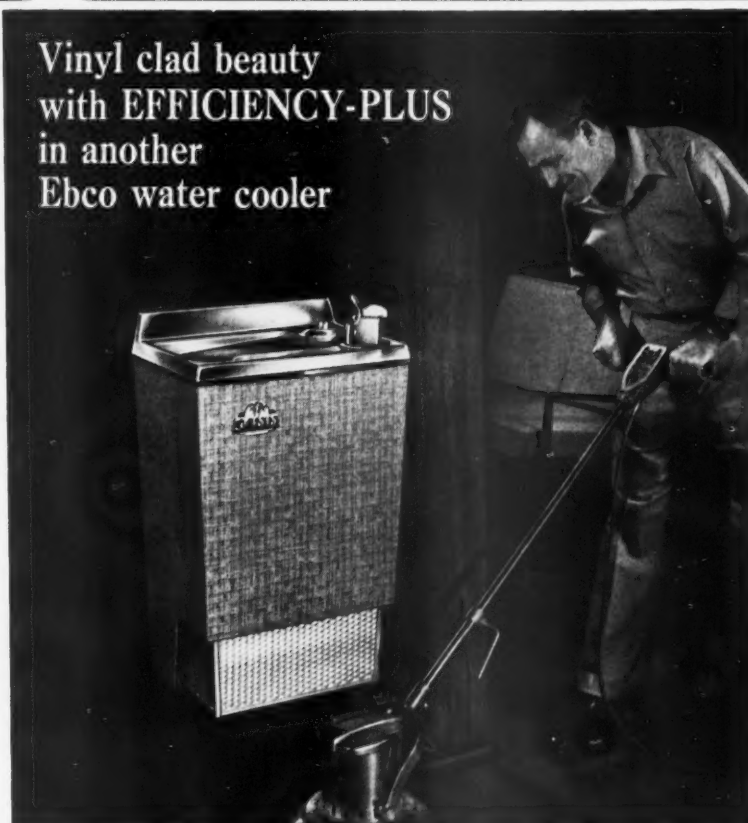
Plug and receptacle are listed by Underwriters' Laboratories and are described by the National Fire Protection Association for use in Class I, Group C or D, explosive atmospheres. They are ideal for hazardous industrial areas and for hospital operating and delivery rooms.



Write now for detailed specifications and prices.

HARVEY HUBBELL, INCORPORATED
BRIDGEPORT 2, CONNECTICUT
Circle 125 for further information

Vinyl clad beauty
with **EFFICIENCY-PLUS**
in another
Ebco water cooler



A beauty to behold... mar-resistant vinyl clad steel... Silver Spice color... brilliant anodized aluminum grille.

Mounts flush to wall, off-the-floor at any height for easy cleaning. Conceals all plumbing. High anti-splash shield. Gleaming, hand polished, stainless steel top whisks clean in seconds.

Proven superior. Greater efficiency and better performance than central cooling systems. Precision engineered for trouble-free service and long life. Two capacities: 7 and 13 GPH.

Full 5-year Ebco warranty covers all parts. Best warranty in the industry.

WRITE FOR FREE VINYL SAMPLE. Vinyl laminated steel swatch in Silver Spice color available on request. Write: The Ebco Mfg. Co., Dept. 4-Y, Columbus 13, Ohio. (See Sweet's A.I.A. File No. 29-D-42)

OASIS
America's Preferred
WATER COOLERS
BY THE EBSCO MANUFACTURING COMPANY

Circle 126 for further information



SPECIFY THE DRAINLINE THAT DEFIES CORROSION PYREX® DRAINLINE

If your client pours corrosives down the drain, give him the dependability and durability he needs by specifying PYREX "double-tough" drainline.

PYREX drainline wasn't born yesterday. It's been handling the toughest, meanest wastes for over two decades. Many of the earliest installations are still in service today. Here's why: It's resistant to more acids and acidic compounds than any other material.

PYREX drainline also drastically reduces maintenance. It neither corrodes nor leaks, so maintenance costs shrivel to almost nothing. Dangerous

hidden problems that corrosive chemicals produce in metallic piping are eliminated. Plug-ups can be seen before complications set in.

PYREX drainline is easy to install. Simple stab-fit, one-bolt coupling . . . light weight . . . fewer hangers, fewer joints . . . no cleanouts or expansion joints — all spell significant savings in installation cost.

There's a lot more, including specs, in Bulletin PE-30. Write for a copy to Plant Equipment Department, 4412 Crystal Street, Corning, N. Y.

see our catalog in Sweet's 



CORNING GLASS WORKS

CORNING MEANS RESEARCH IN GLASS

Circle 127 for further information

LITERATURE

FALLOUT SHELTERS/POWER

Booklet describes various models and sizes of a series of power generator sets suitable for fallout shelter installation, and indicates how and where to install them. Also included are tables giving fuel consumption, wattage necessary for shelter appliances, cooling air requirements and dimensions, weight and wattages. (4 pp.)

AIA FILE NO. 31-A-61

MFR: KOHLER CO.

Circle 322

HVAC



HEATING PRODUCTS

Brochure contains heating product construction and design features. Supplemental text gives complete technical information and specifications with engineering recommendations for proper applications of the products. (20 pp.)

AIA FILE NO. 30-B

MFR: W. STEINEN MANUFACTURING CO.

Circle 323

AIR MOVING STANDARD TESTS

Association's standard test code for air moving devices and the procedures to follow in the application of testing are covered in a new publication. Graphs, tables and other data are included. (27 pp.)

AIA FILE NO. 30

ASSN: AIR MOVING & CONDITIONING ASSN., INC.

Circle 324

CHURCH CLIMATE CONTROL

How centralized electronic temperature control can cut heating and cooling costs is detailed in a new brochure designed for the church architect and the church administrator. Brochure covers fingertip temperature checking and setting from one

centralized control; zone thermostats to control temperatures in different church areas, and night setback to help reduce heating and cooling expenses. (4 pp.)

AIA FILE NO. 30-B/F

MFR: MINNEAPOLIS-HONEYWELL REGULATOR CO.

Circle 325

HVAC EQUIPMENT RATING

Booklet presents certified ratings for centrifugal, axial and propeller fans and power roof ventilations, the result of tests made by various manufacturers in accordance with standard test codes adopted by the Association. Brochure explains the various factors involved in the testing.

AIA FILE NO. 30

ASSN: AIR MOVING & CONDITIONING ASSN., INC.

Circle 326

HVAC IN EDUCATION

A pocket size booklet based on the manufacturer's film "The Changing Patterns of Education" discusses various aspects of new educational planning and dwells on the cost factor involved in air conditioning today's schools. Film is also available.

AIA FILE NO. 30

MFR: JOHN J. NESBITT, INC.

Circle 327

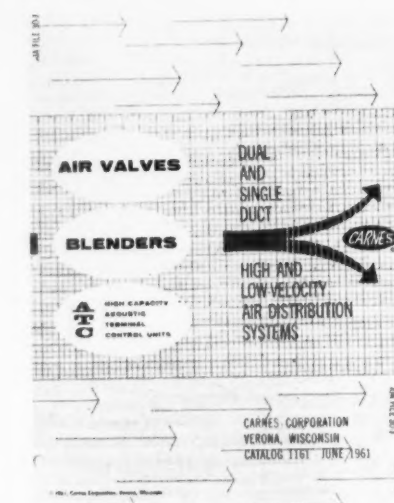
HVAC "CASE HISTORIES"

Illustrated brochure comprises a group of "case histories" depicting a series of HVAC products in various applications. Some 24 cases are featured. (32 pp.)

AIA FILE NO. 30-F

MFR: ACME INDUSTRIES, INC.

Circle 328



AIR DISTRIBUTION EQUIPMENT

Brochure covers a line of equipment for use in air distribution systems. Suggested applications, rating charts

LITERATURE

for each piece of equipment, typical specifications and other information are included.

AIA FILE NO. 30

MFR: CARNES CORP.

Circle 229

FOUR HVAC REFERENCE CARDS

Four engineering reference guide cards covering "Basic Fan Laws," "Velocities Required for Conveying Materials," "Air Velocities Required for Exhaust Hoods" and "Units of Measurement Required for Fan Selection," have been made available to architects and engineers. Easy to read and use as a time-saving reference, each guide measures 5"x7" and is printed in black on heavy yellow stock for easy reading and durability.

AIA FILE NO. 30-D

MFR: CHICAGO BLOWER CORP.

Circle 230

SMALL UNIT HEATERS

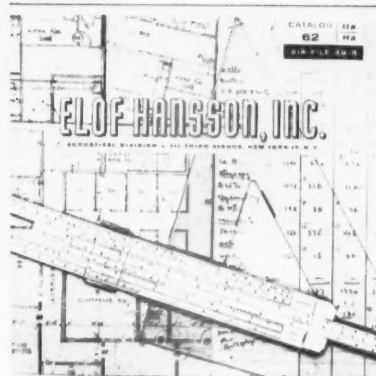
Manual contains specification data on three types of small-capacity steam and hot water heaters. Capacities of the unit heaters and the horizontal, vertical and four-way air discharge patterns are discussed. Data also includes steam and hot water ratings, physical dimensions, and electrical and piping diagrams. (20 pp.)

AIA FILE NO. 30-C-1

MFR: CARRIER CORPORATION

Circle 231

ACOUSTICS



*The Complete Line
of Researched and Engineered
Sound Control Products*

ACOUSTICAL MANUAL

Brochure reviews a series of tested engineered sound control products. Included are acoustical tile, ceilings, lay-in panels, and specialized acoustical products. A brief discussion of

What the *Well-Dressed* GLASS will wear...
New HERRINGBONE *Pattern*...
Sets the Pace for the Smartest Interiors



A linear pattern of jewel-like radiance, the contrasting light and dark stripes and arresting diagonal configuration of HERRINGBONE* combine with perfection of finish as the finest achievement of the rolled glass manufacturer's art. Architects, designers and decorators will discover in its warm, glowing beauty a versatile glass that never loses its individuality and whose charm and freshness lift it out of the ordinary. Recommended for the separation of living areas in the modern home, commercial partitions and wherever else transmitted light should become a vibrant, interesting part of the decorating scheme.

**MISSISSIPPI
GLASS COMPANY**

88 Angelica St. • St. Louis 7, Missouri

Distributors in Principal Cities of the United States and Canada

Thick- ness	Approx. Light Transm'n	Weight Unpacked Lbs.-sq. ft.	Maximum Sizes
1/8"	84.5%	2.0	48 x 132
3/16"	82.0%	2.8	60 x 132

* Patent Applied For.

Free sample on request.

Circle 123 for further information

LITERATURE

the manufacturer's acoustical laboratory and engineering services is included. (28 pp.)

AIA FILE NO. 39-B

MFR: ELOF HANSSON, INC.

Circle 332

SOUND EQUIPMENT

A new brochure details a series of architectural loud-speaker baffles and furnishes technical data affecting selection and placement. In addition to standard models, text discusses many new custom designs.

AIA FILE NO. 31-i-7

MFR: SOUNDOLIER, INC.

Circle 333

FURNISHINGS



DANISH FURNITURE

New brochure contains 116 photographs (15 in full color), of an original series of Danish furniture for residential, commercial and institutional use. (41 pp.)

AIA FILE NO. 28-A-2

MFR: JOHN STUART, INC.

Circle 334

OUTDOOR FURNITURE

Brochure shows a redesigned line of outdoor and folding furniture. All items are displayed in color photographs with detailed information given on all products in the series. (12 pp.)

AIA FILE NO. 28

MFR: HAMPDEN SPECIALTY PRODUCTS CORP.

Circle 335

DRAPERY HARDWARE

Complete product description and illustrations help simplify specification of drapery hardware using new brochure. "Easy-to-use" index features the complete line of the drapery hardware products.

AIA FILE NO. 27

MFR: STANLEY-JUDD DIV., THE STANLEY WORKS

Circle 336





Youngstown — growing force in steel

SOURCE

**900 leading pipe distributors
are your reliable source
for quality steel pipe
from Youngstown**

Youngstown steel pipe is a huge inventory of kinds and sizes in 900 pipe distributor warehouses. It's a hurry phone order rushed right to your job site.

Youngstown steel pipe is continuous weld, electric weld, or seamless. Choose it in all standard steel specifications or corrosion resistant Yaloy steel. Get it black or galvanized, standard weight, extra strong, double extra strong, large O.D. Bend it, weld it, thread it. Install it quickly, install it easily using standard pipe installation practices.

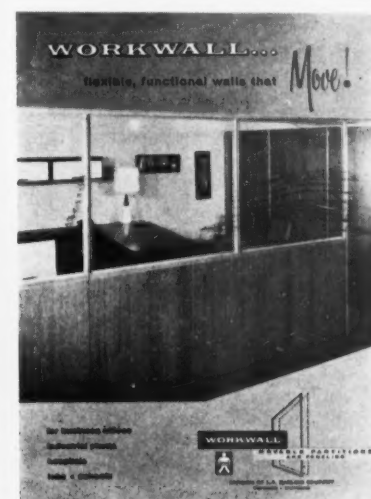
Youngstown steel pipe is sold through pipe distributors. More than 900 of them across the nation. They are the leading pipe distributors of every community. You know them. Call them. Count on them to cut, thread, mix, and deliver Youngstown steel pipe fast, in the size and grade you need. Depend on their service. Depend on their stocks. They're your sure source for Youngstown pipe.



For full information about Youngstown Steel Pipe, write: Dept. 19B;
The Youngstown Sheet and Tube Company, Youngstown, Ohio



LITERATURE



MOVABLE WALLS

Brochure displays a series of movable partitions and partition systems available with a series of panels in a variety of sizes and finishes. Discussion includes a locking principle which permits attachment of all types of utility fixture by twist of a screwdriver.

AIA FILE NO. 35-H-6

MFR: L. A. DARLING CO.

Circle 337

LIBRARY FURNISHINGS

Literature is intended as an "idea stimulator" in the designing and placement of furnishings in small and large libraries. Literature shows and describes installation of manufacturer's furnishings at Douglass College in New Brunswick, N. J.

AIA FILE NO. 28-B

MFR: ESTEY CORP.

Circle 338

STEEL LOCKER COLORS

Two new 4 page color guides are designed to aid specifiers in color-keying steel lockers and shelving to plant, school, institutional or office color schemes. Each color guide contains sample swatches.

AIA FILE NO. 28-B

MFR: PENCO DIV., ALAN WOOD STEEL CO.

Circle 339

RESEARCH LAB PARTITIONS

Application bulletins illustrate how architects and laboratory consultants have employed a series of metal framing and movable partitioning systems to up-date existing facilities and to provide future expansion in new laboratories.

AIA FILE NO. 35-H-6

MFR: UNISTRUT PRODUCTS CO.

Circle 340

← Circle 129 for further information

LITERATURE

MISCELLANY

REINFORCED PLASTICS MANUAL

Manual provides the material specifier with an up-to-date compilation of data on reinforced plastics from which materials comparisons and design decisions can be drawn. It also offers a method of initial estimating for reinforced plastics. (40 pp.)

AIA FILE NO. 24

MFR: OWENS-CORNING FIBERGLAS CORP.

Circle 341

BUILDING INSULATION

Publication deals exclusively with the use of a cellular glass insulation and board in the architectural field. It contains the latest information on the use of the building and insulating material in roofs, curtain walls, core walls, wall linings, ceilings, parking decks and perimeters. It also covers the varied applications with on-the-job photographs, line drawings and recommended application procedures. (20 pp.)

AIA FILE NO. 37-B

MFR: PITTSBURGH CORNING CORP.

Circle 342

ZERO HAS THE WEATHER STRIPPING YOU NEED

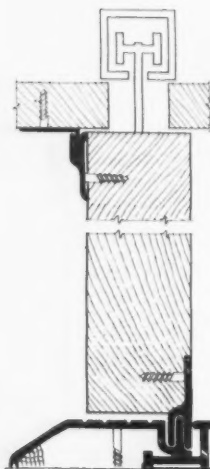


Get ZERO's new 1962 Catalog, with full size details of the complete line of saddles & weather stripping. Write for your copy today!

ZERO Weather Stripping for:

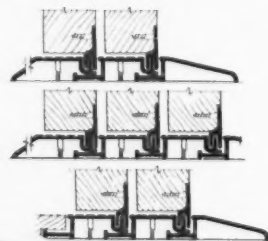
- Doors
- Windows
- Lightproofing

- Soundproofing
- Sliding Doors
- Saddles
- Saddles for Floor Hinged Doors



SLIDING DOOR SADDLES

This effective, versatile equipment provides positive interlocking—allows easy operation. Available in extruded aluminum and bronze.



19b-ZER



ZERO WEATHER STRIPPING CO., INC.

451 East 136th St., New York 54, N.Y. • LUdlow 5-3230



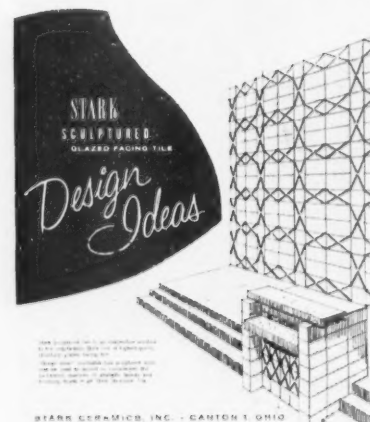
SLABS JACKED UP COLUMNS

Booklet is a study of construction techniques used on a large lift-slabs project. It gives information on the manner in which 830-ton slabs were hydraulically jacked up the columns. Brochure also tells how a concrete additive helped improve concrete "flowability" for easier pumping, and facilitated casting of the 215'x 69'-9" slabs monolithically, without joints or pour strips. (4 pp.)

AIA FILE NO. 4-E

MFR: THE MASTER BUILDERS CO.

Circle 343



FACING TILE DESIGN IDEAS

Numerous sketches in this book provide unusual installation ideas for a series of glazed facing tile. Installations were suggested in a recently completed contest conducted nationally among architects and designers. Virtually all types of buildings are represented in collection.

AIA FILE NO. 23-A-2

MFR: STARK CERAMICS, INC.

Circle 344

CORROSION-PROOF CEMENTS

Six corrosion-proof cements are reviewed in a new bulletin. These cements are based on epoxy, furan, phenolic and polyester resins and sulfur and silicate materials. Tables give detailed physical properties and estimating factors for most types of corrosion-proof masonry construction. Featured is a chart giving the corrosion resistance of six cements to 166 common corrosives. (12 pp.)

AIA FILE NO. 3-B

MFR: ATLAS MINERAL PRODUCTS CO.

Circle 345

SEAMLESS TERNE ROOFING

Brochure covers the history of terne roofing and its varied uses. Also included are standard, horizontal seam, batten seam, standing seam, and flat locked seam specifications. Numerous application photographs and step-by-steps aids are shown. (8 pp.)

AIA FILE NO. 12-A-31

MFR: FOLLANSBEE STEEL CORP.

Circle 346

NEOPRENE-HYPALON ROOFING

Preparation of roofing surface, application of fabric reinforcement, application of primer and coatings are discussed in a brochure on neoprene hypalon roofing coatings. Full color photographs of famed roof designs utilizing this type of coating are included. (4 pp.)

AIA FILE NO. 12-A

MFR: CARAM-MIRACLE DIV., MIRACLE ADHESIVES CORP.

Circle 347

WALL MOISTURE

Technical bulletin suggests applications of a product for foundation walls designed to prevent wet interior surfaces. Application details, based on either brushing or spraying, are included.

AIA FILE NO. 3-B

MFR: MAINTENANCE, INC.

Circle 348

HARDWOOD FLOORS

The proper treatment of hardwood flooring after initial installation, as well as other suggestions, are included in a maintenance literature item.

AIA FILE NO. 19-E-9

MFR: MAPLE FLOORING MANUFACTURERS ASSN.

Circle 349

GLASS TINTING PRODUCT

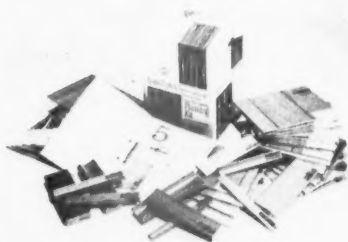
New folder reviews applications of a glass tinting product. Details on reduction of heat transmission, fade and glare are included. (4 pp.)

AIA FILE NO. 26-A-7

MFR: SUN-X INTERNATIONAL, INC.

Circle 350

LITERATURE



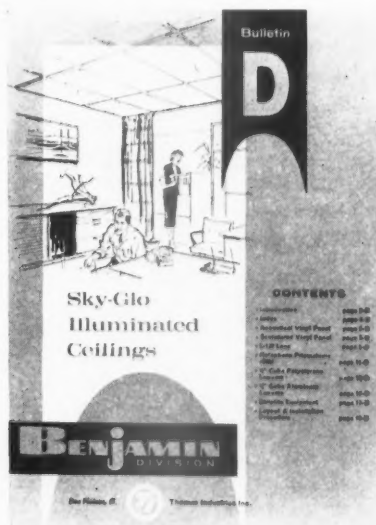
NEW WOOD PLANNING KIT

A new wood planning kit for architects has been prepared. The kit, 10" square and 12" deep, holds up to 20 11"x8" prefinished sample panels; prefinished moldings in nine basic patterns; and specifications, illustrations and descriptive literature.

AIA FILE NO. 19

MFR: E. L. BRUCE CO., INC.

Circle 351



ILLUMINATED CEILINGS

A series of illuminated ceilings is fully detailed in a new brochure. Booklet offers complete dimensional data, layout and installation instructions, plus illustrations on suspension mounting and complete illumination data. Also included in the brochure is a wide selection of shielding elements and lighting equipment. (20 pp.)

AIA FILE NO. 31-F-231

MFR: BENJAMIN DIV., THOMAS INDUSTRIES, INC.

Circle 352

USING BUTYL RUBBER

Brochure gives properties and typical applications for butyl rubber in building applications. Discussed are butyl's use for roofing, roof coating,

Two-way concrete joists formed by Ceko Steeldomes, create a striking "waffle" pattern overhead in recently completed 22-story Merchandise Mart Building, Atlanta, Georgia.

Edwards & Portman, architects
Jack Wilborn, engineer
Consolidated Realty Investments, Inc., contractor



*You can achieve
long spans,
heavier loads,
unusual ceiling decor,
when your designs
call for...*

Ceko Steeldome 2-way concrete joist construction

There's a trend to two-way dome slab construction. From coast to coast you see "waffle-type" exposed ceilings—in commercial buildings, banks, apartments, hospitals, schools, churches, parking garages—in new buildings of every description. Why? Two reasons: (1) two-way dome slab construction permits economical long spans and heavier loads, and (2) the Ceko Steeldome way of forming this construction offers opportunities for unusual interior styling.

You can create special ceiling effects at low

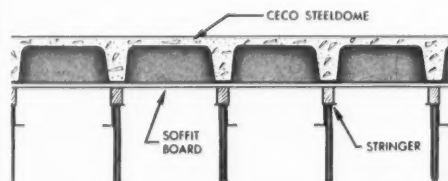
cost by painting the smooth concrete surfaces, or spraying on acoustical material. You can apply acoustical tile—or design for "open" treatment. There are many possibilities awaiting your skill.

For additional information about Ceko Steeldome construction, as well as one-way construction with flangeforms, adjustables, and longforms, ask for your copy of 72-page manual 4002-C, "Monolithic Reinforced Concrete Construction with Ceko Service."

Ceko Steel Products Corporation | 5601 W. 26th Street, Chicago 50, Illinois
Sales offices and warehouses in principal cities

steelforms • concrete reinforcing • steel joists • curtainwalls, windows, screens, doors
• steel buildings • roofing products • metal lath

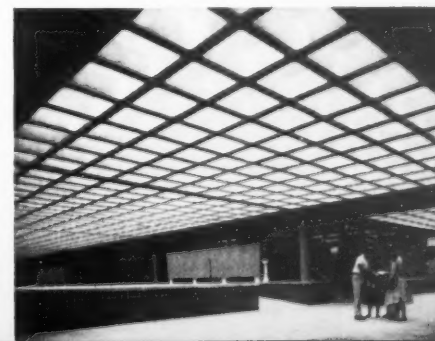
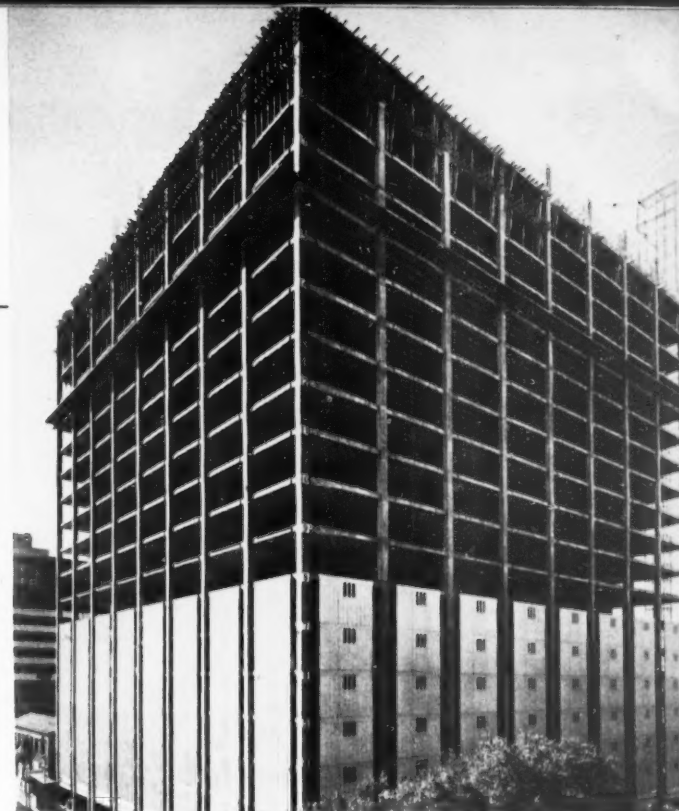
In construction products Ceko engineering makes the big difference



You can design for uniform ceiling heights with Ceko Steeldome two-way concrete joist construction.

Dramatic effect is created with "open-grid" used for patio area of North Central High School, Miami, Florida.

Polevitzky, Johnson & Associates,
architects
H. J. Ross Associates, engineers
Thompson & Polizzi Construction Co.,
contractor



lasting low-cost moisture barriers "ELECTRO-SHEET" Copper-bonded products

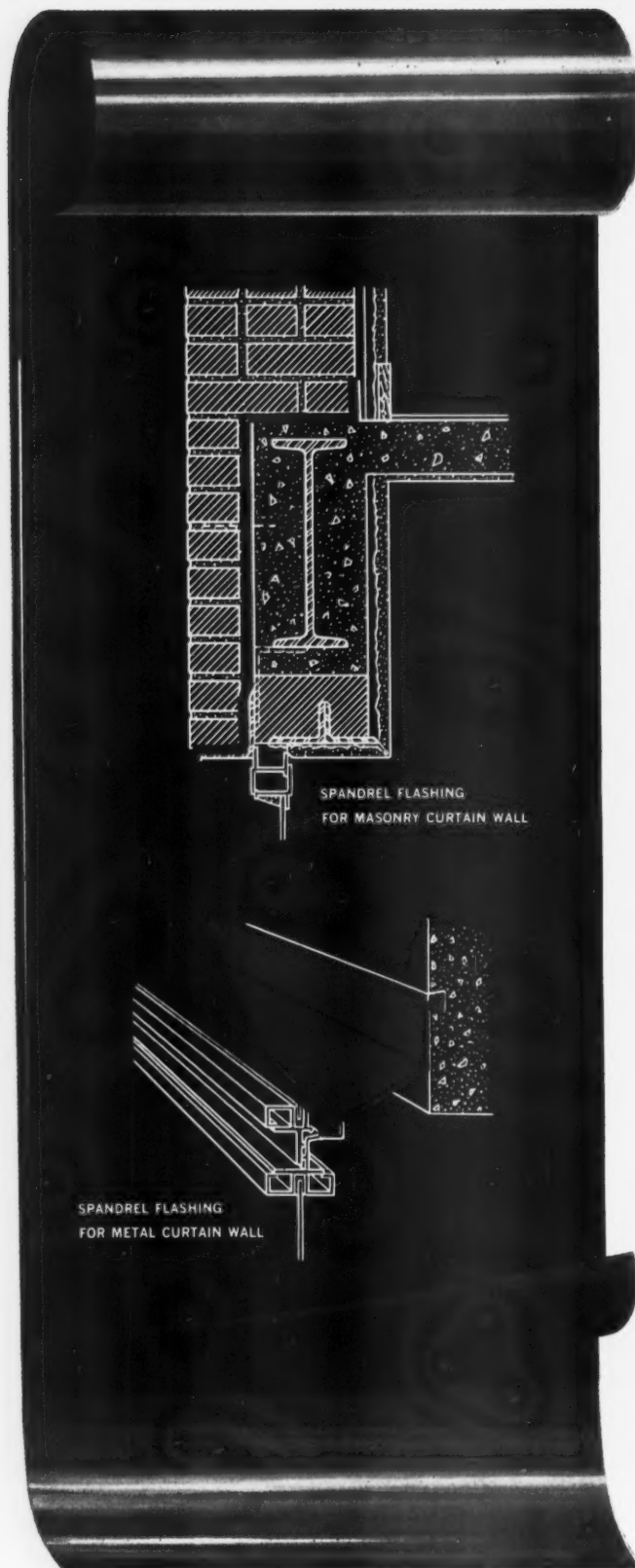
"Electro-Sheet" is pure, thin copper produced in long, wide rolls by electrodeposition. It won't rust and resists most forms of deterioration. Bonded to high-grade building papers or fabrics . . . or to asphaltic compounds . . . it makes concealed flashings you can trust.

"Electro-Sheet" Copper-bonded products are widely used in the hidden trouble spots of buildings: spandrel beams, door and window heads and sills, shower rooms and stalls, parapet walls, etc. They are flexible, easy to handle, and available in rolls up to 60" wide from building supply dealers throughout the United States and Canada.

For more information about Anaconda "Electro-Sheet" and a list of manufacturers of the flashing products, write: Anaconda American Brass Company, Ansonia Division, Ansonia, Connecticut.

62-1000A

ANACONDA®
AMERICAN BRASS COMPANY



"Electro-Sheet" Copper is available bonded on one or both sides.

LITERATURE

traffic decking, gasketing, weather-seals and void fillers, floor cushioning, shock and sound absorbing pads and water barriers. A description of the various forms in which butyl is available is also included. (8 pp.)

AIA FILE NO. 24-E

MFR: ENJAY CHEMICAL CO.

Circle 353

METAL TILES

Brochure discusses the varied color and styles of tiles which include porcelain on aluminum, enameled aluminum, solid copper, stainless steel, copper glaze, brushed aluminum, brass glazed and an Early American series. Treatment of these tiles, such as "plain," "antiqued," "hammered" and "hammered antiqued," is also discussed. Thirty of the tiles are included to show patterns and colors. (22 pp.)

AIA FILE NO. 23-F

MFR: VIKON TILE CORP.

Circle 354

ROOFING SYSTEMS

File folder contains 21 sheets describing a versatile series of roofing systems. Detailed cross-sectional drawings, dimensions, structural data and other pertinent information is included.

AIA FILE NO. 17-A

MFR: BUILDING PANEL DIV., FENESTRA, INC.

Circle 355

PANEL DIAPHRAGM DESIGN

Brochure explains one of the principal methods available to the structural engineer for providing lateral stability in a building: use of the roof or floor systems as diaphragms. Demonstrated is the function of a lateral diaphragm showing the forces acting on a rectangular one-story structure. Brochure then describes how these forces are absorbed by the structure.

AIA FILE NO. 17-A

MFRS BUILDING PANEL DIV., FENESTRA, INC.

Circle 356

LABORATORY SINKS

Brochure explains and describes a series of sinks designed for use in research, medical and other laboratories. Various styles are shown with detailed dimensions and other pertinent data. (11 pp.)

AIA FILE NO. 35-E

MFR: DURIRON CO., INC.

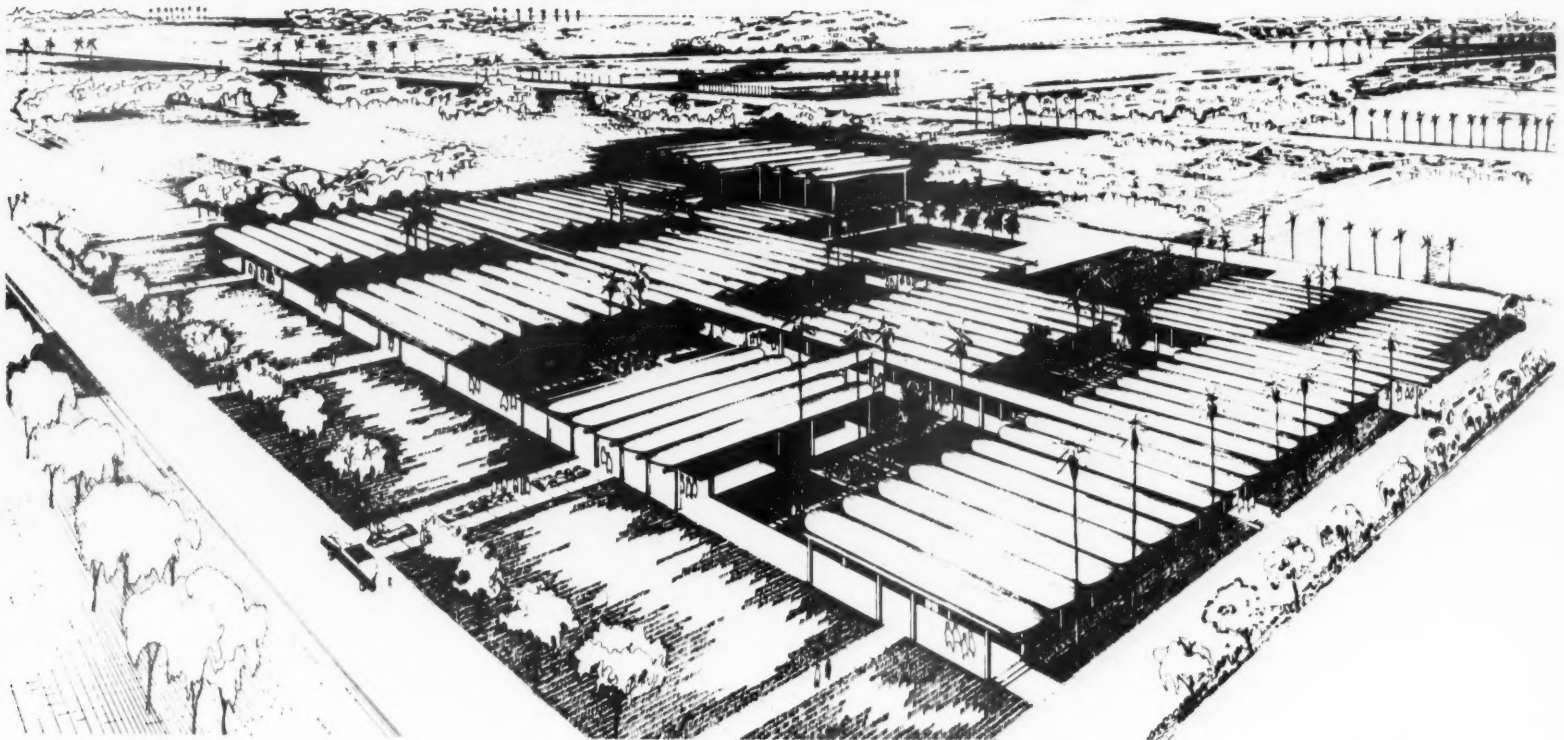
Circle 357

PREVIEW: 37

COAKLEY JUNIOR HIGH SCHOOL
HARLINGEN CONSOLIDATED INDEPENDENT SCHOOL
DISTRICT, HARLINGEN, TEXAS
BOWMAN SWANSON HIESTER
MADELY AND WINANS

PROJECT
OWNER

ARCHITECTS—ENGINEERS
MECHANICAL ENGINEERS
(ADMINISTRATION UNIT ONLY)



PEN AND INK DRAWING shows roof character and disposition of design elements.

It was the desire of the owner to provide for a specified number of students within a limited budget. The number of students determined the area of the building and it was not feasible to reduce area to secure economy. A semi-fireproof building was wanted, one which would have a low insurance rate, and at the same time require as little maintenance as possible. To achieve the durability required, the architects felt that the building should have concrete foundation, columns, beams and roof deck, that the covered walks should be concrete to reduce maintenance, and that saving should be in labor or in form work.

The 35 teaching station school is a cluster type plan wrapped around central enclosed courts. It is designed for 1,000 students with basic facilities sized for 1,200, and provides gymnasium, library, cafeteria and kitchen, classrooms, and rooms for band, choir, home-making, vocational

arts, industrial arts, mechanical drawing and fine arts.

Site and orientation

The site is located in the southwest section of Harlingen, Texas (*see site plan*). All units are one story structures. The main entrance is to the east, student and bus entrance to the north and service to band, kitchen, and shops to the west. The student parking lot holds about 70 cars. Units are oriented so that classrooms are on the north and south sides of a double loaded corridor. This is typical orientation for all units. There are open areas for planting in the courtyards between buildings.

General design features

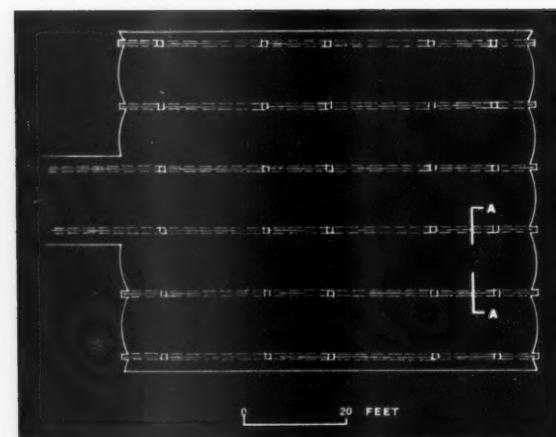
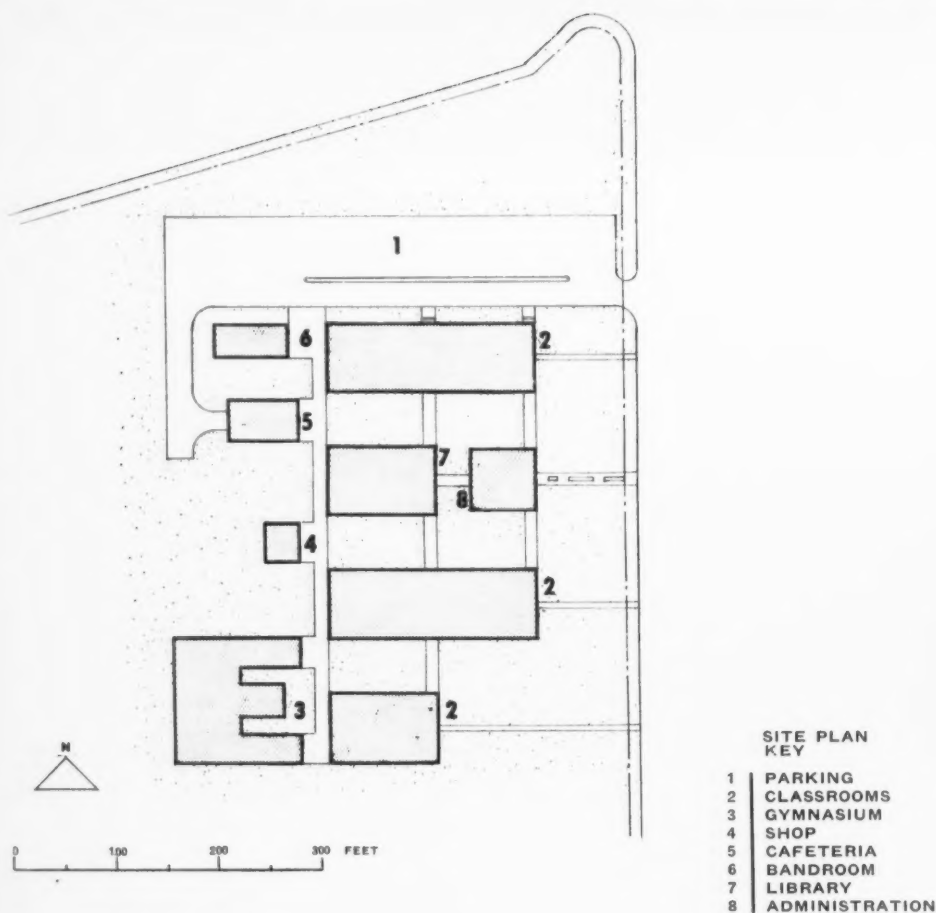
Classrooms are located on the southeast corner of the site for quiet and in order to take advantage of the breeze.

The cafeteria is to the west, near the central part of the complex, and is served by a service drive along the rear of the school, as is the shop. The gymnasium is in the extreme southwest corner, next to the playground; dressing rooms and stage are between the gymnasium and the main north-south connecting covered walks. Any future classrooms are to be built to the south of the southern most classroom unit, which, in turn, can be extended.

Structural notes

To simplify construction, the architects aimed for a school which would be designed on a module to allow maximum repetition.

Thus the number of types of roof deck would have to be kept to a minimum to save on formwork. To solve this the school was designed on a module with all structure in the gymnasium designed on a 15' bay to allow for stage widths,



TYPICAL ROOF PLAN showing arched panels (middle three) and slab panels (at either end).

remainder of the school being based on 12' bays. This required only two different spans of roof deck in the entire school and reduced the number of types of forms to a minimum. A unit space module was set up that would satisfy the demands of the various functional areas. For example, a typical classroom is two bays wide, a laboratory three bays, and the library six bays, thus allowing multiple use of space with a standard structural dimension.

Foundation is suspended concrete slab-and-beam on concrete under-reamed footings. All columns and beams are cast-in-place concrete, and all roof deck is precast concrete. Plumbing lines are generally suspended from the bottom of the foundation, and electrical conduits are laid over precast arches and covered with insulated concrete. The gymnasium structure design is concrete bents; other areas are column and beam.

Notes on precast arches

Since the arches would be pre-cast, weight of

slabs had to be kept to a minimum to simplify the lifting operation. To achieve this, lightweight concrete was used, and the lengths of the slabs were established so that arches would not weigh more than about 6,000 lbs. Economy was gained by designing the arches as *true* arches, thus making maximum use of the compressive strength of concrete. With tension at a minimum, light reinforcing could be used, leading to a thickness of only 2". The largest stresses occur in the arches during lifting and placing, and they were designed to withstand these stresses. Reinforcing steel that forms a loop on top of the arches is used for the lifting eyes. The arches have a definite horizontal thrust, which is taken up by the concrete bents and by horizontal steel ties between the bents.

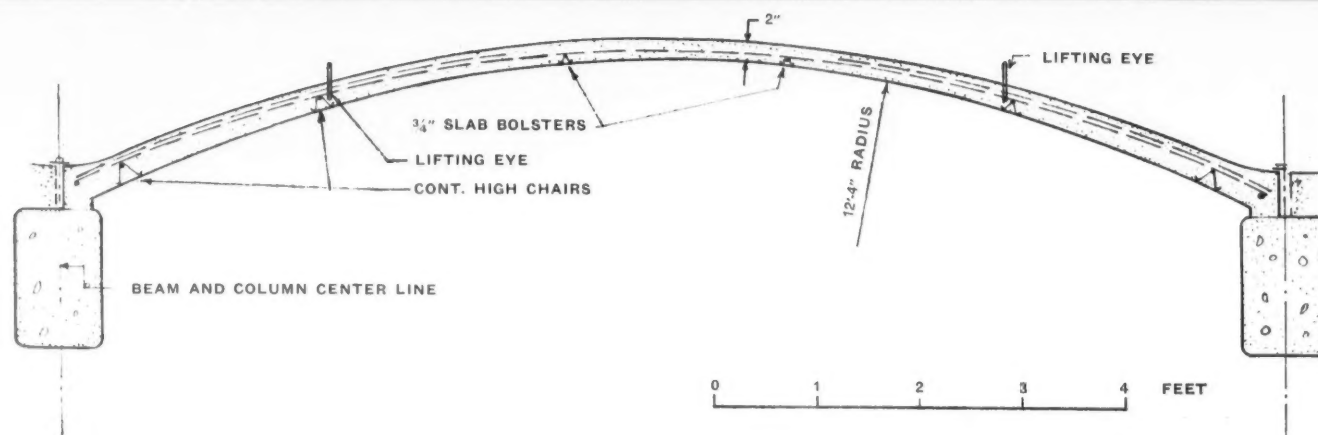
In general, arches occur as intermediate panels and arch-shaped slabs at ends, to take thrust.

Casting beds were built on the ground and located as close as possible to the point of in-

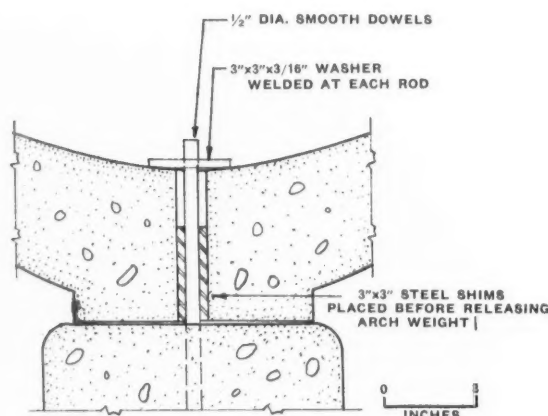
stallation. These casting beds were constructed with 2"x4" frames, with 1"x4"s over the top to form the curve of the arches. Masonite sheathing was placed over the wood framing to provide a solid surface, and a light metal liner was placed over this to increase life of the form. The casting beds were anchored to the ground to prevent spreading of the forms under the weight of wet concrete, and to lift slabs from the forms.

Approximately 541 slabs were required to roof the entire structure; 23 form beds were constructed, allowing each form to be used 23 times. Construction of the forms and casting of the arches were the first items begun on the job, and slabs were being cast continually during the foundation work. Fiber glass was used to feather out laps of the metal. The form gives a smooth surface and requires little rubbing.

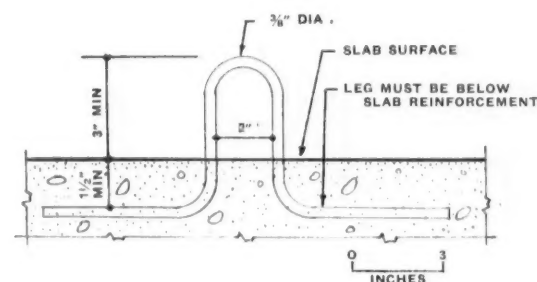
Slabs are removed from the forms after three or four days. Laboratory and field tests are used



SECTION A-A shows details of typical arch panel. Slab panel has same shape but thicker cross-section, and its reinforcing bars are placed differently.



DETAIL at joint between panels.



DETAIL of lifting eye. There are four per panel.

to determine strength before lifting. After they are lifted from the forms, the slabs are stacked one on top of the other to conserve site space.

Special hoist used

The slabs are lifted by a specially designed hoist. This consists of a steel frame with chains and hooks which are lowered so that the chains are hooked through the "lifting eyes" of the slab. The steel frame serves to distribute the load equally at each lifting point. Steel frame and concrete arch are then lifted by a hydraulic motor.

The arches are lifted into place on the concrete beams by a drag line, and set in place between dowels cast into the top of the concrete beams (see details). A standard steel washer is dropped over the dowel and tack welded into place to provide a permanent hold-down for the arches. Slabs are set into place at the rate of about 12 per hour.

Mechanical notes

The school is not air conditioned but the administration unit has ductwork sized for future air conditioning. This unit is heated by a central gas fired furnace with ductwork supplying air to individual rooms. All other areas are heated by suspended gas fired heaters. The gymnasium has a fire line and a system of hose cabinets.

Electrical notes

Overhead 12.4 KV primary power is brought to the site and transformed to 120/208V, 3-phase, 4 wire secondary power. The transformer and metering sub-station structure is west of the cafeteria, which houses the 800 amp—3 phase main secondary distribution panel. Emergency lighting is supplied to exit lights throughout the school, and emergency power is provided to the main telephone panel and the intercom master located in the administration building.

The 208V power is transformed to 220V in north classroom unit to accommodate domestic 220V—1 phase appliances. All power and lighting loads are served from the same 120/208V 3-phase 4 wire panels, which are fed by an underground distribution system.

Lighting system

The lighting system is 120/208V 3-phase, 4 wire. Pendant fluorescent rapid start fixtures are used throughout the school for general lighting. The gymnasium is illuminated by "Lo Bay" incandescent fixtures with prismatic reflectors.

Cost

Cost of the school is \$602,187.00 or \$8.56 per square foot. This includes general construction, plumbing, heating, and ventilating, and science laboratory equipment, electrical work, kitchen equipment worth \$19,000.00, paving, curbs, site work, and basketball backstops.

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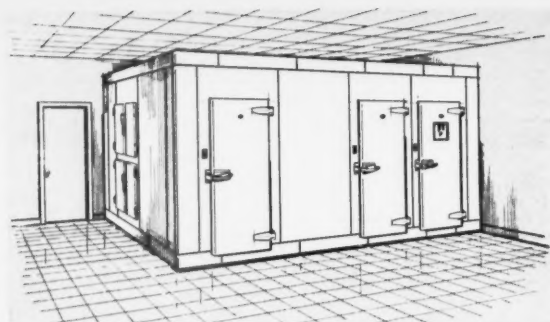
ABSTRACTS

Seagram or tailfins?

Professor John Marston Fitch of Columbia describes vividly the extremes of taste that characterize our affluent society. The following excerpts form part of a recent address to members of the Cleveland Chapter, AIA.

"The stylistic distance between the Platonic geometry of the new Seagram Building in New York and the absurd vulgarity of this year's automobile is a measure of the crisis in American design today. It would be hard to find another period in all history which presented such aesthetic antitheses. These two objects do not even belong to the same spectrum of design: one is an aristocratic affectation of poverty, the other a "nouveau riche" ostentation of wealth. One draws its inspiration from Procrustean concepts of mathematical order, the other from the paperback literature of space-age warfare. Between these two poles, with no more apparent relation than the constellations of the Milky Way, lie all the other art forms with which our landscape is furnished . . . "Meanwhile, the anthropologists and sociologists have been at work dissolving another set of provincialisms. We can no longer reject a war club because it was once the instrument of a cannibal or allow a prejudice against human sacrifices to color our judgment to the Mayan temple. Intellectually, these accomplishments of scholarship are majestic but they are not always comfortable, and their impact upon design is not always beneficent. To be sure this sort of artistic irradiation has invigorated giants like Picasso and Wright. It often leaves us lesser men paralyzed.

"Advanced contemporary taste has turned more and more to the art forms of the pre-industrial past—to folk, primitive, and prehistoric art. The reasons for this new interest are clear. Such art, for all its expressive richness and variety, is always based on a simple and limited range of materials and techniques. It displays an acute respect for these and thereby achieves a kind of "organic" unity of form and content, which is in refreshing contrast to the sleazy eclecticism of so much contemporary design."



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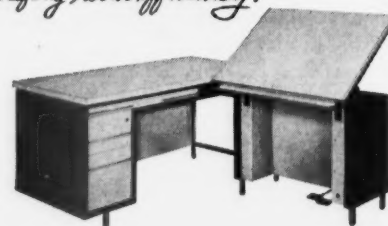
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Architectural & Engineering News

BOOKS

Four walking tours of modern architecture in New York City, prepared by Ada Louise Huxtable. New York; Doubleday & Co., Inc., 1961. 76 pp. 95¢.

The guide, prepared for the Museum of Modern Art and the Municipal Art Society, leads the reader through the "combination of new and old, the melange of styles and incredible congestion that led to architectural chaos, a chaos of undeniable vigor and fascination."

It divides the mid-town area into four convenient walking tours, and includes the most significant modern office buildings, residences, stores and public structures, among them Lever House and the Seagram Building. A map and illustrations supplement the informative commentary for each tour; a brief introduction describes some of the factors that have influenced development of the New York skyline.

The author does not hesitate to cite examples of both good and bad architecture, and discusses these in well-phrased terms. A valuable and much needed work.

More of the same on the various other periods of New York architecture would be very welcome. *CKR*

Piezoelectric Properties of Wood by V. A. Bazhenov. New York: Consultants Bureau Enterprises, Inc., 1961. 240 pp. \$9.50.

The results of research in the Soviet Union on the problem of piezoelectricity in wood, which arose in connection with the more general problem of the piezoelectric effect in monocrystalline substances. The findings are the results of more than 12 years of investigations carried out at the Institute of Crystallography and the Wood Products Laboratory, Forestry Institute, Academy of Sciences, USSR.

Prestressed Concrete Simply Explained by H. Kaylor. New York: John Wiley & Sons, 1961. 158 pp. \$5.25.

Designed to help architects and engineers to a better understanding of prestressed concrete. Chapters include basic principles; methods and applications; materials required; losses of prestress; design of simply supported beams; examples of design; composite

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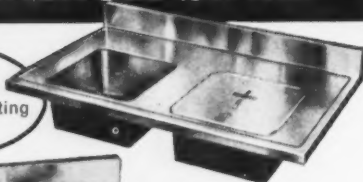
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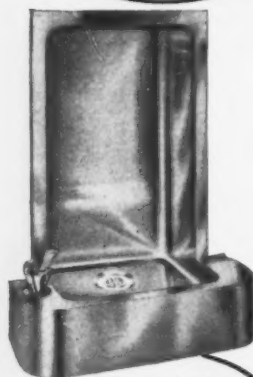
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BOOKS

(Continued from page 57)

construction; liquid-retaining structures; and potential uses.

Old Brooklyn Heights by Clay Lancaster. Rutland, Vt.: Charles E. Tuttle Company, 1961. 188 pp. \$6.00.

A survey of architectural styles that have left their mark on American construction, especially in the Brooklyn Heights section of New York City. It is also a street guide for a tour of the individual, century old residences on the Heights.

Architectural Follies in America by Clay Lancaster. Rutland, Vt.: Charles E. Tuttle Company, 1961. 244 pp. \$10.00.

A close look at 50 American contributions to the font of architectural curiosities.

Treatment and Disposal of Radioactive Wastes by C. B. Amphlett. New York: Pergamon Press, Inc., 1961. 290 pp. \$12.00.

Series of monographs by C. B. Amphlett of the Atomic Energy Research Establishment, Harwell, England, dealing with radioactive wastes and the problem of disposal. Topics covered in the book include preliminary chemical separations; evaporation and storage of liquid wastes; fixation of highly active wastes in solid form; disposal of solid waste; chemical and biological treatment of low and medium activity waste; disposal of wastes to the environment; treatment and disposal of gaseous waste; and future trends in waste treatment and disposal.

Handbook of Instrumentation and Controls by Howard P. Kallen. New York: McGraw-Hill Book Company, Inc., 1961. 550 pp. \$15.00.

Contains complete data for use in determining the best selection and effective application of instrument and control systems for mechanical services in commercial, institutional and industrial buildings. Each type of instrumentation found in mechanical services is covered from a practical point of view.

The volume is very well illustrated and contains a large number of tables and charts which illuminate text material.

The scope of the work includes

many new concepts in control systems, such as high-temperature, high pressure steam power plants and large central air conditioning systems.

Among the areas covered are pressure temperature, pressure, pH, conductivity, liquid level, as well as turbine-generator, heating system, air-conditioning, refrigeration, and diesel engine controls.

Professional-Partnership Purchase Plans by Alden Guild, J. D. Montpelier, Vt.: National Life Insurance Company, 1961. 94 pp. Available through request written on business office letterhead.

Offers solutions to the problems caused by the death of one partner in professional-partnership. Partnerships are analysed, as well as the desirability of business purchase plans, entity and cross-purchase plans, current programs, taxes, valuation of a partner's interest, and "good will."

It includes a specimen agreement section, which offers a guide to drawing up professional-partnership agreements.

The Engineer in Industry in the 1960's, prepared by the National Society of Professional Engineers. Washington: National Society of Professional Engineers, 2029 K Street N.W., 1961. 148 pp. \$4.00.

A study of the relative position of the engineer in modern industrial environment. The book reviews the historical developments in both labor and management which have led to the present status of the engineer in industry, and present trends which will affect future status.

The book covers the areas of individual goals, national labor policy, decline of engineering, engineer-management relations, and professional programs.

A companion booklet, **The Engineer in State Government**, also prepared by the National Society of Professional Engineers, is a study of merit system coverage and personnel policies for engineers employed at the state government level. It includes tables of the merit systems of the states, coverage of engineers by merit or civil service systems, and programs to encourage participation in engineering societies.

NAMES



Costello Studios

THEODORE CONRAD is a red-cheeked, graying, 51-year-old craftsman who has, from his rambling, 36-room studio on the New Jersey Palisades, produced in miniature most of the recent additions to the New York City skyline as well as a large proportion of important architecture elsewhere.

His prominence as *the* architectural model maker is due largely to the fact that he is not a *manufacturer*, but a craftsman and artist who creates almost entirely by hand. Not only the building materials themselves, but also trees, landscaping, automobiles, personnel, windows, doors, furniture and even elevators, are for the most part produced by careful handicraft methods. His normal staff comprises 11 people.

Model costs depend on the intricacy demanded by the architect, with some prices ranging as high as \$15,000. How expensive a structural model should be depends on how much the architect wants to show in miniature. How much the architect is willing to spend often depends on the degree to which a client must be persuaded on specific features of the design.

While studying architecture at Pratt Institute, he created models for architect Harvey Wiley Corbett at night. He later moved on and worked with Wallace K. Harrison. Not long afterwards he opened a model shop in New York City, and in due course moved to New Jersey. His reputation was consolidated by the dozens of models he produced for the 1939 New York World's Fair and by his model for the Museum of Modern Art.

In addition to his career of model making he is Commissioner for Redevelopment of Jersey City.

"As models begin to take form, materials, location, and structural perspectives sometimes change," Conrad explains. "Many times this means the architect must change his designs, and it is a lot easier to change them at the model-building stage than to try to effect change in the process of actual construction."

His study of structures as models and their site problems has brought about in Conrad many reactions which he expresses in his characteristically forthright manner. He questions the designs of architects who place structures in densely-populated areas without giving enough thought to the building's physical relation to its surroundings, nor to how well it will "work" in relation to both its neighborhood and to its own daily operations.

But Ted Conrad's major interest still lies with his very successful model-building firm. He has found that many architects will not rest until their model is finished, and he has often put these haggard gentlemen up for the night while his shop continued working.

His New Jersey location often presents problems when moving models to New York. His 12' model of the Seagram Building, which was 16' high when mounted on a truck body, was turned back at the Lincoln Tunnel. Fortunately, Conrad remembered all the old trolley car routes through northern New Jersey, leading to the George Washington Bridge. With the flashing red lights and sirens of escorting police cars, he slowly moved over the bridge and down Broadway, *à la* Barnum, into New York's theater district, and across to Park Avenue, where the model was displayed for a year. One day a maintenance worker set about cleaning the model, laid a ladder against it and started climbing. The structure crumbled under the workman's weight. The workman had thought the dark-brown building model *was* bronze: the ultimate compliment, if a bitter one, to Conrad's belief in realism.

Recently, after he and Ed Stone had cleared up some late business at the studio, they ate an informal supper on the studio's balcony overlooking Manhattan and then, hopping into a car, they dashed through nearby Lincoln Tunnel and up to Columbus Circle for a close-up look at Stone's Huntington Hartford Museum, currently under construction. By midnight, they were scampering like school-boys around a half-completed building. They had tired of examining the doll-sized model. CKR

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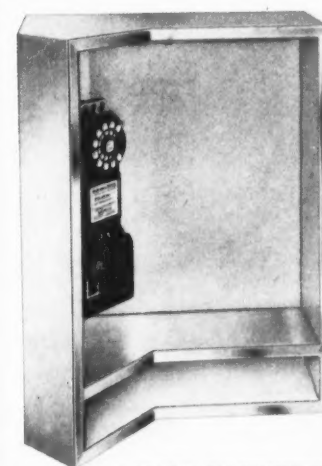


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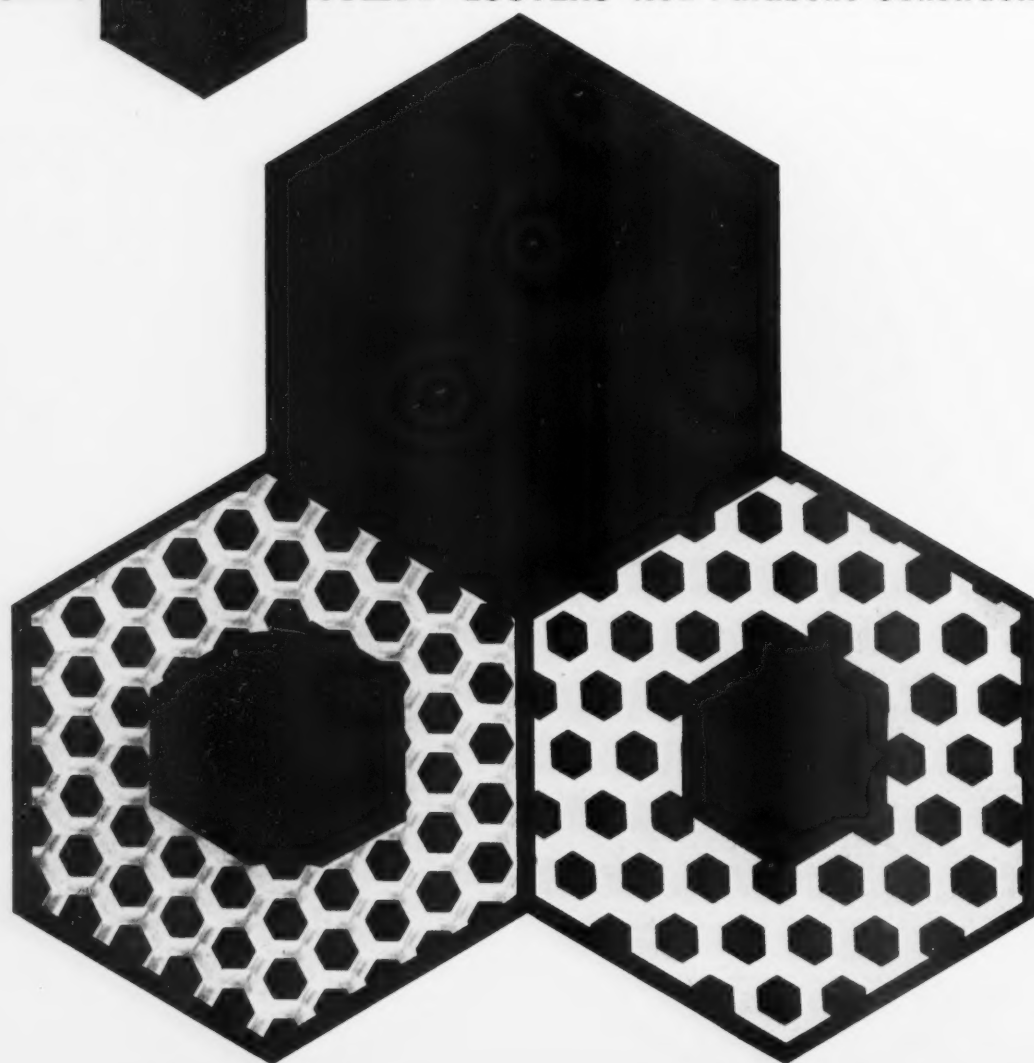
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DOCUMENTS

The documents listed below are available through the associations and agencies cited. All requests should be directed accordingly.

Joint Engineers Council, 345 East 47th St., New York 17, N.Y.

Concerning Some Legal Responsibilities in the Practice of Architecture and Engineering and Some Recent Changes in Contract Documents, by John R. Clark, 1961. 26 pp. \$1.00.

Discusses the problems of liability in the practice of the design professions, reviews recent changes in AIA contract documentation; and points up areas of possible liability.

Superintendent of Documents, U. S. Government Printing Office, Washington, 25, D.C.

Specialized Science Information Services in the United States, 1961. 530 pp. \$1.75.

Prepared for the National Science Foundation by the Battelle Memorial Institute, the book contains descriptions of 427 science information centers offering information in the physical and biological sciences and technology. For each information center listed, the directory contains a brief description of the area of scientific specialization, the types of information services provided, and publications issued by the organization. A subject index is provided to assist in locating sources of specific information.

National Academy of Sciences—National Research Council, 2101 Constitution Avenue, Washington 25, D.C.

Causes and Measurement of Walkway Slipperiness, NAS-NRC 899, 1961. 26 pp. \$2.00.

An evaluation, by a task group of technical representatives from major agencies of the government, of the present state of knowledge and future needs respecting the causes and measurement of walkway slipperiness.

In addition to conclusions and recommendations about present knowledge and future needs, the booklet discusses the mechanics of walking; factors influencing frictional requirements and floor safety; fundamentals

(Continued on page 63)

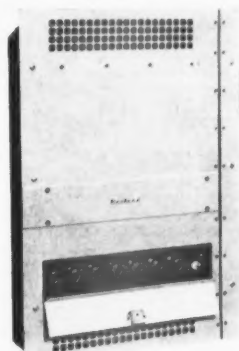
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December 1961

DIGEST: 36

THE OPEN AIR STRUCTURE: SHRINKAGE LEAKS AND THEIR PREVENTION

DIGEST this month describes a technique of shrinkage leak prevention in open air structures such as multi-level parking garages, as well as in analogous applications such as walkways over concrete slab roof decks. The authors are, respectively, chief designer of National Garages, Inc. and technical field advisor with Tremco Manufacturing Company.

by Richard C. Rich and John N. Cassella

The construction of open air multilevel structures has introduced a number of problems. One such problem is the costly disruption caused by normal shrinkage cracks in the parking garage floors. Snowy, winter water, mixed with calcium chloride, leaks through these floor cracks and causes costly damage 1 to finishes and chrome parts of automobile parked in areas below, 2 to the structure itself by the rusting of reinforcing rods in the concrete, 3 to ceiling areas under the floor, and 4 to retail stores and business offices located beneath garage areas.

Ways have been developed to prevent this costly sort of damage in both new and existing structures. One technique employed today involves the application of a 1" fibrated mastic flooring in which a heavy duty glass membrane is embedded. The mastic flooring solves the leakage problem, withstands heavy wear for long periods of time and improves with age. Should patching ever be required, relatively little expense is incurred.

To protect the mastic floor against drippage of oil, gasoline and grease a final treatment of a floor seal is applied.

The step by step procedure is as follows:

STEP 1: The area is treated with a quick drying asphaltic cutback primer (*fig. 1*) (*Time:* 2 to 6 hours of drying, depending upon weather conditions; overnight drying preferred.)

STEP 2: After structural joints are stripped with pre-shrunk impregnated jute embedded in the primer, a strip of heavy duty glass membrane 12" wide is applied around the perimeter of the area, as well as around all columns, drains or curbs (*fig. 2*). (*Time:* this step and the one which follows can be performed on the same day and allowed to dry overnight or, if possible, in a 24 hour period).

STEP 3: A 30" wide heavy duty glass membrane is then rolled out and embedded in an asphalt emulsion. Subsequent strips are laid in the same manner with each strip lapping the previous strip by 2" to 4", thus forming a monolithic mat (*fig. 3*).

STEP 4: To protect the waterproof membrane against foot traffic while applying the finished topping, a slurry mix consisting of 1 part cement and 1 part asphalt



Figure 1



Figure 2



Figure 3

A/E NEWS DIGEST REPORT: WATERPROOFING AIA FILE NO. 7

DIGEST: 36

emulsion is applied (fig. 4). (Time: this step and the two final steps require no drying time, and can be executed in quick succession).

STEP 5: A check is made for low areas which are brought to a level or pitched to a drain. Strips of wood $\frac{3}{4}$ " x 2" are laid against all wall areas, around columns, curbs or pipes projecting through the floor, to form a joint $\frac{3}{4}$ " wide. This joint is caulked after the final topping with an asphalt base compound (figs. 5, 6).

STEP 6: A mastic fibrated topping is applied to a depth of 1", screeded to level and power floated to a moderately smooth finish. The entire area then receives a floor seal to protect against drippage of oil, gasoline and grease.

Eliminates solvents

The primer and the fibrated material are clay type asphalt emulsions. This type of emulsion provides an efficient way of obtaining a distribution of pure asphalt without recourse to solvents which are slow in drying and subject to combustion.

The *primer* is a clay emulsion made from a low melting point asphalt, so that when the emulsion has cured through evaporation of the water, a continuous film of a highly tacky elastic asphalt is present on the substrate, providing adequate adhesion to the topping which is applied over it.

The *mastic fibrated flooring* is an asphalt emulsion of the clay type to which fibers have been added; these permit uniform elimination of moisture from the mix during curing, thus reducing to a minimum the amount of shrinkage distortion that occurs.

Barrier forestalls adhesion

Clay emulsions are made in dispersers which permit the wrapping of each tiny asphalt particle with a film of a special type of Bentonite clay and water; this prevents the particle from adhering to its neighbor during storage and later during application.

A complete mastic fibrated floor topping is composed of a fibrated asphalt emulsion plus sand, gravel and a hydraulic cement.

After the topping has been put in position and the water begins to evaporate from the emulsion, the hydraulic cement begins to react chemically with the water to pull it out of the emulsion system, thereby eliminating the water-Bentonite barrier between asphalt particles: the asphalt particles will begin to stick to each other and to the aggregate with which they have been mixed in the topping. The curing of a topping of this sort in fact results from the evaporation of water from the mix, plus the loss of water by chemical reaction with the hydraulic cement.

Process is not reversible

These emulsions if properly formulated are irreversible. Once the protecting barrier around the particle has been destroyed by loss of water, it cannot be replaced to any appreciable extent; this is true even if the topping were to be immersed in water and work



Figure 4



Figure 5



Figure 6

done upon it to try to abrade and reform the emulsion.

An added characteristic of the clay type emulsions is the formation of a sponge-like cellular structure upon curing. This is due to the presence of the Bentonite clay distributed throughout the mass. This cellular structure resists the normal tendency of asphalt to flow, so that traffic does not develop ridges, rolls, valleys and high points.

The same technique is applicable where a wearing surface must provide a waterproof coating, as on sidewalks over basement areas and walkways over concrete slab roof decks.

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(Continued from page 60)

of friction; and machines and methods for measuring friction.

The booklet is illustrated and contains appendices on apparatus for measuring slip resistance, and references.

Residential Building Sewers, NAS-787, \$2.00.

The report deals with the use of sewer pipe made of a number of different materials. It covers the service performance of house sewer materials; existing codes and standards; causes of unsatisfactory pipe performance; design and installation practices; and needed inspection and maintenance procedures.

Thermal Insulation for Piping, NAS-NRC 896, 1961. \$2.00.

Results of a survey of Federal and private opinions and practices regarding thermal pipe insulation. In addition, the report contains a list of the technical characteristics of pipe insulation; a discussion of recent test results; recommendations; a method of determining thicknesses of pipe insulation; and an outline of the limitation of various pipe insulations.

American Society for Testing and Materials, 1916 Race Street, Philadelphia 3, Pa.

1960 ASTM Proceedings, 1961. 1242 pp. \$12.00. Members—\$8.00.

Contains the technical accomplishments, including reports and papers, together with discussions, which were offered to the society in 1960. Includes the summary of proceedings of the 63rd Annual meeting, and annual report of the board of directors.

ASTM Standards on Plastics, 1961. 1222 pp. \$10.00. Members—\$8.00.

Covers tests and specifications relating to cellular plastics, plastic pipe, and such materials as epoxies, urethanes, plastisols and organosols, as well as measurement of plastic tensile strength under impact conditions among the 25 new standards in this, the 12th edition of this work. There are 204 standard specifications, methods of test, and recommended practices included in the book.

Symposium on Shear and Torsion Testing, 1961. 120 pp. \$4.75.

A comprehensive review of shear and

(Continued on page 64)

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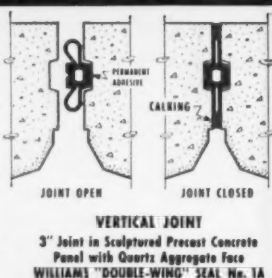
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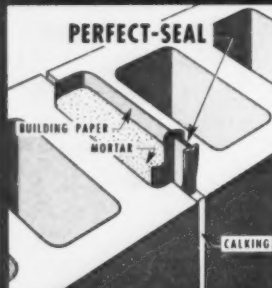
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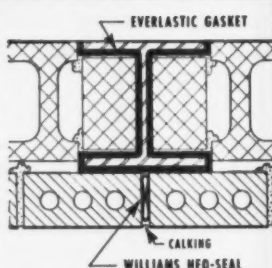
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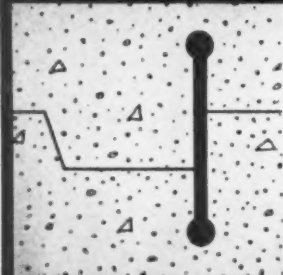
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DOCUMENTS

(Continued from page 63)

torsion test methods and information for establishing recommended shear and torsion test practices. Represents the results of ASTM committee shear test research in such areas as adhesives, plastics, plywood, wood, rubber, cements, soil and road surfacing materials, and metals.

Symposium on Nuclear Methods for Measuring Soil Density and Moisture, STP-293, 1961. 106 pp. \$4.00. Members—\$3.20.

Presents data obtained on specific projects and evaluates the methods by comparing results with those obtained through conventional methods for testing soil density and moisture. Apparatus, instruments, techniques, limitations, and applications are described in the book, which is illustrated.

Papers on Road and Paving Materials, STP 294, 1961. 92 pp. \$3.50. Members—\$2.80.

Taken from papers presented at the ASTM annual meeting in 1960, the papers cover such areas as temperature susceptibility in asphalt; effect of compaction temperature on the properties of bituminous concrete; and the influence of asphalt composition on its rheology; and the stress deformation characteristics of sand-asphalt mixtures in anti-skid applications. One paper deals with the hypothesis that the permeability of bituminous concrete pavement may play a major role in its durability.

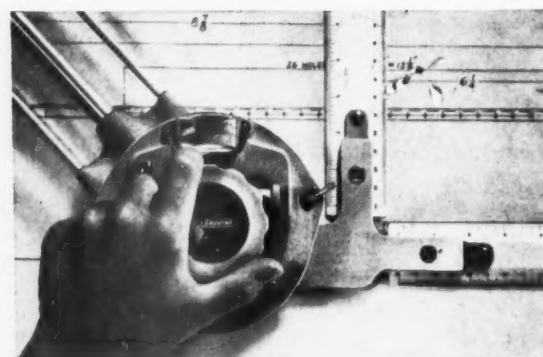
Reinforced Plastics Division, The Society of the Plastics Industry, Inc., 250 Park Avenue, New York 17, N.Y. Guide and Data for Engineers and Purchasing Agents, 1961. 16 pp. Upon request.

Production methods for reinforced plastics are discussed, including six basic molding techniques, along with the applications of each, and physical and chemical properties of parts produced by each.

Insulation Board Institute, 111 West Washington Street, Chicago 2, Illinois. Specifications for 1/2-inch Fiberboard Nail-Base Sheathing, 1961. Upon request.

New recommended product and application specifications for 1/2-inch nail-base fibreboard sheathing.

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EDITORIAL

PRIMA DONNAS IN PRIVATE PRACTICE? There has been a lot of talk these past few months about giving the architect a "prima donna" status in the building field. Proponents justify this on the not untenable ground that since, when all is said and done, a building stands or falls, figuratively, on its aesthetics, and since aesthetics are today in short supply because the architect, allegedly, has been restricted in his powers, then it stands to reason that any design procedure giving the architect overriding, even dictatorial powers should be encouraged by every possible means.

This reaction against current "design team" thinking may stem from two sets of conditions. 1. Architects have too limited an influence on what is being built today, in that they are mostly excluded from residential and industrial construction. 2. Our cities are becoming increasingly ugly and unpleasant to live in. Let the architect have undisputable power, it is said, and all will be well.

The prima donna solution, as we see it, has the virtue of simplicity, but it is not without several important drawbacks, for reasons which follow.

First: the *prima donna* architect need not, necessarily, turn out to be a good architect to boot.

Second: unlike Tebaldi, Picasso or Toscanini, the architect must handle technical details, requiring consultants, whose recommendations he cannot arbitrarily reject whenever they run counter to his design concept. In any case, contract documents impose a heavy legal responsibility on his shoulders, and errors can be fatal.

Third: a powerful architect should be the *effect* of talent, not its *cause*.

Fourth: the characteristics of the prima donna are in essence a question of temperament. If it is not in the *nature* of a particular architect to run a show, no amount of legislation will do the trick.

Fifth: there is an inherent risk in the prima donna approach, of again relegating the architect, in the public eye, to the 19th century position of a superficial arbiter of taste, one who is restricted to decisions on disposition of spaces, finish materials, ornament, and not much else.

Thus the concept offers little more than an attractive, at first glance, but not a realistic reaction against some of the frustrations today's architect must undergo.

We cannot, in all fairness, in this technical age of ours, encourage prima donnas at the drafting table, much as we approve of them in other locales.

CONFUSION, COLOR, AND CERULEAN BLUE. A vexing problem today is that of color identification: how can architect Smith tell contractor Brown that he requires a certain shade of blue on his walls, when there is no uniform system of color identification that has been accepted and adopted by all producers of building materials?

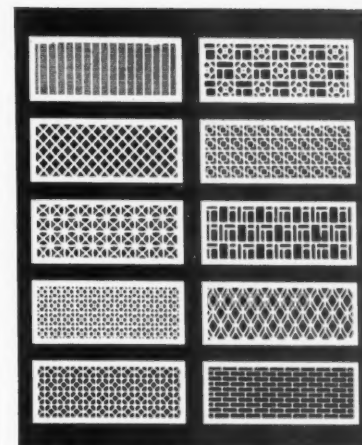
One way is by matching color samples. But this is not very scientific, and subject to error.

Another is by referring to a uniform system of color nomenclature. Under such a system, how many shade variations to produce can still be left up to each manufacturer. So can brand color "names": producer A can call Cerulean Blue what producer B may prefer to call Robin's Egg, so long as both attach to their brand names also the name and code number of a common system, say the Munsell.

This would in no way restrict choice, since it is aimed at *identifying* colors, not at *standardizing* them. It would not, admittedly, guarantee *good* use of color in our buildings. Further, it may be hard to exploit in the case of some natural materials such as wood and marble, which involve several shades of color in the same material.

In all other cases, however, it would simplify specification writing immeasurably, and forestall many misunderstandings and disappointments. SAK

A/E NEWS hopes that its readers will have a very Merry Christmas, and wishes them health and prosperity in the New Year.



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DEC. 3-7 NATIONAL ASSOCIATION OF HOME BUILDERS: annual convention — exposition, McCormick Place, Chicago, Ill.

JAN. 15 AMERICAN INSTITUTE OF CONSULTING ENGINEERS: annual meeting, Engineers' Club, New York, N.Y.

JAN. 25-27 NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS: annual winter meeting, King Edward Hotel, Jackson, Miss.

JAN. 29-FEB. 2 AIEE ELECTRICAL ENGINEERING EXPOSITION: New York Coliseum, New York, N.Y.

JAN. 31-FEB. 2 AMERICAN MANAGEMENT ASSOCIATION: briefing session on "Industrial Preparedness—Planning for Corporate Continuity and Survival," Hotel Astor, New York City.

FEB. 12-15 12TH ANNUAL EXPOSITION OF THE AIR CONDITIONING, HEATING AND REFRIGERATION INDUSTRY: Great Western Exhibition Center, Los Angeles, Calif.

FEB. 19-23 AMERICAN SOCIETY OF CIVIL ENGINEERS: convention, Hotel Shamrock, Houston, Texas.

FEB. 5-9 AMERICAN SOCIETY FOR TESTING AND MATERIALS: committee week and Spring meeting, Statler - Hilton and Sheraton-Dallas Hotels, Dallas, Texas.

MARCH 12-15 AMERICAN CONCRETE INSTITUTE: 58th annual convention, Brown Palace Hotel, Denver, Col.

MARCH 19-21 NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION: second national electric comfort heating exposition and symposium, Hotel Sherman, Chicago, Ill.

MAY 7-11 AMERICAN INSTITUTE OF ARCHITECTS: annual convention, Dallas, Texas.

SEPT. 6-11 INTERNATIONAL COUNCIL FOR BUILDING RESEARCH STUDIES AND DOCUMENTATION CONGRESS: Cambridge, England.



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